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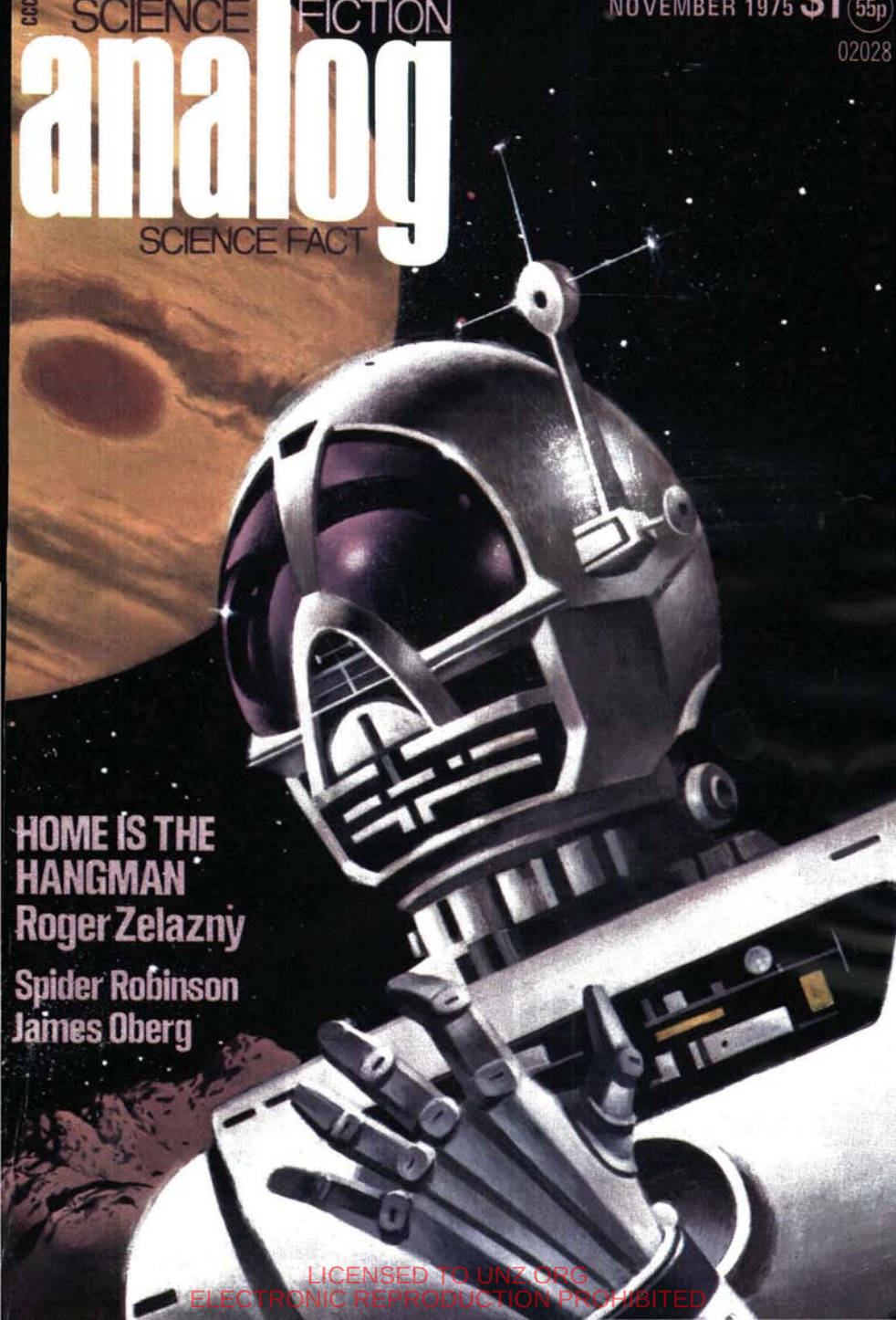

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A Calendar of Upcoming Events

October 31-November 2, 1975:
ICON-1 (Iowa SF Conference) at Iowa City, Iowa. Guest of Honor: Roger Zelazny. Registration: $5 in advance, $7 at the door. Info: Greg Frost, Box 510, Iowa City, Iowa 52240.

November 7-9, 1975:
NOVACON 5 (SF Conference) at Royal Angels Hotel, Birmingham, England. Guest of Honor: Dan Morgan. Registration, 75 p. Info: Pauline E. Dungate, Flat 4, 144 Monyhull Hall Rd., Kings Norton, Birmingham, England.

November 7-10, 1975:
TUSCON III (Tucson area SF Conference) at Tucson Inn, Tucson, Arizona, Guest of Honor: Gordon Eklund. Registration: $4 until November 1, 1975, $5 thereafter; $10 'Supermembership'. Info: TusCon III, Box 49196, Tucson, Arizona 85719.

November 13-15, 1975:
SECONDARY UNIVERSE (Academic SF Conference) at Miami, Florida. Sponsored by the Science Fiction Research Association. Info: Dr. Martin H. Greenberg or Dr. Joseph Olander, Department of International Relations, Florida International University, Tamiami Trail, Miami, Florida 33144.

November 22-23, 1975:
MEXICON 1 (SF Conference) at Guadalajara, Mexico. Guest of Honor: Mack Reynolds. Registration: $3 supporting, $5 attending (checks payable to Elliot Weinstein). Info: Elliot Weinstein, APDO 6-869, Guadalajara 6, Jalisco, Mexico.

September 1-6, 1976:
MIDAMERICON (34th World Science Fiction Convention) at Hotel Muehlbach, Kansas City, Missouri. Guest of Honor: Robert A. Heinlein; Fan Guest of Honor: George Barr; Toastmaster: Bob Tucker. Panels, talks, masquerade, films, presentation of the Hugos and the John W. Campbell Award for Best New Writer. Registration: $15 attending, $5 non-attending until January 1, 1976. Info: Post Office Box 221, Kansas City, Missouri 64141.

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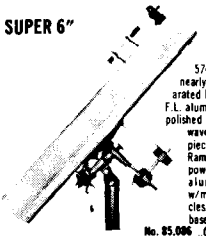

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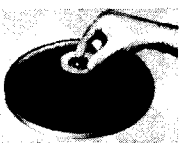

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EDITOR'S NOTE: The February 1975 Editorial, "Culture Lag," pointed out the aching gap between our knowledge of human social behavior and the application of that knowledge in dealing with problems as diverse as the Sahel famine, molecular genetics, cultural clashes between industrialized and "emerging" societies, urban life, and American foreign policy. The major thrust of the Editorial was summed up in one paragraph:

"What about the anthropologists? The scientists who study the cultures of humankind also have power and responsibility. They have the power to see beyond the immediate greed of quick profits or the sudden enthusiasm of shortsighted 'answers' to complicated social problems. They have the responsibility to make their voices heard. If governments or private corporations refuse to listen to their advice, the anthropologists must take their case to the general public, and make their knowledge available to all."

In answer to that challenge, Paul A. Ballonoff and Sue Ellen Jacobs have written the following Guest Editorial for Analog. They take the position that there are "culture lags" inside the anthropological profession that hinder the application of modern anthropological knowledge to crucial social problems. In essence, they accuse the anthropologists themselves of harboring "culture laggards" in their ivied towers.

Paul Ballonoff is with the University of Texas Health Science Center at Houston, and is editor or co-editor of four collections of historic or current work in mathematical anthropology and population genetics, as well as author of a book on *Mathematical Foundations of Social Anthropology,* currently in press. Sue Ellen Jacobs is Assistant Professor of Anthropology and Director of Women's Studies at the University of Washington.

CULTURE LAGGARDS?

Paul A. Ballonoff
Sue Ellen Jacobs

Guest Editorial

The February 1975 Editorial touched upon both the successes and failures of modern anthropology and inquired after reasons for the latter and whether these could be resolved. The answer to the second part is a loud "YES, but . . ." The "YES" refers to the listing of concrete actions and possible future ones which we present later in this Editorial; the "but" refers to the many serious difficulties now present in the organization of aca-

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demic anthropology, and of academics in general.

The organizational difficulties are reflected in a number of symptoms, of which the following are only the more obvious manifestations:

Symptom I: The Peacock Program. Among the mild-mannered not-so-supermen who inhabit universities it is considered uncouth not to be an expert in something, and in anthropology preferably in everything. This inability to admit limitations (a characteristic of false pride, and not of science) is reflected in the great number of university "programs" which exist only on paper, whose real purpose is to distract those students with genuine interest and competence and to delay at all costs development of new concepts in areas not under direct control of the particular department or school. Curiosity is particularly frowned upon!

Symptom II: The Planned Incompetent. A very good way of preventing intellectual growth in areas not under your direct control is to produce a great number of graduates with clear incompetence in necessary areas, and to proclaim these as the experts. A common way of achieving this is to only give passing grades to those who are clearly bored or sycophantic, while ignoring, giving low marks, or even denying admission to those who demonstrate genuine enthusiasm or really creative behavior. Anthropology is today so complex that no individual can easily master even a single portion of it, and to even do this it is necessary that special skills be acquired outside of the immediate academic department. Yet students who venture outside of their present native department to acquire additional (basic) skills often discover they cannot even receive a grade on their doctoral qualifying exam, and so forth.

Symptom III: The Forty Percent Commitment. Very frequently when an individual claims an area as his specialty, what this means is that it receives perhaps forty percent of his working time. And when departments claim a program in an area, what they mean is that they have one of these forty percent specialists on the staff, someplace. (There is in the current Guide to Departments of Anthropology at least one individual at a supposedly "good" institution who lists fourteen *different* areas as his "specialty"!?) Furthermore, such specialties more often consist of presenting lists of work done by others (*i.e.*, a bibliography) than by any substantial work done by the individual.

Symptom IV: Hiding Behind the Freshmen. While there are a number of quite brilliant anthropologists who have made careers in undergraduate education, there are an unfortunately greater number of varied capacities who have lost by their *own choice* their careers in the

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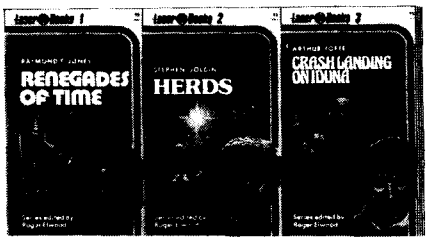

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same endeavor. While there is an admittedly high burden of teaching on departments of anthropology, there is also an admittedly high responsibility both in this teaching and in associated academic research to work for the highest possible standard, at all levels. But instead, the bibliography-compilers have discovered that by teaching only the most general information, by rehashing the obvious and by presenting only a small number of "fun" examples, large groups of freshmen can be bored simultaneously but not so severely threatened by this boredom that they will discourage their friends from taking the same easy ride next semester. By maintaining a large following of the dull, many academics have avoided the responsibility of dealing with the quick. This technique has effectively converted the "institution of higher learning" to a kind of advanced day care center at the undergraduate level, and has completely destroyed many graduate institutions as seriously functioning entities.

Associated with this official stupidity in institutions has been a campaign of irresponsibility in ways indirectly connected with them. For a minor example, it can be documented that one grant-giving group was receiving but *not* acknowledging proposals for research conferences. When such events are infrequent and quickly rectified they may be considered accidents of bureaucratic fumbling, but when they regularly occur in the administration of a field or a department and are *not* generally rectified, then they must be considered as deliberate policy. In anthropology, and in fact in other areas of our experience, senior persons appear to have deliberately used their powers in irresponsible ways to promote their personal advantage, while giving minimal or no recognition to those not in their immediate cocktail circuit.

As has been so vividly illustrated in recent years, the intellectual leadership of the United States has lost almost all contact with the reality around it; furthermore, it seems to have lost even the recognition that a reality exists outside of the ice cubes and bibliographies.

On the other hand, there are many anthropologists engaged in *bona fide* applied situations. In these situations anthropologists serve in a variety of capacities, but most of all they act as advisers, advocates, or expert witnesses on issues related to "culture." More often than not, they are using accumulated knowledge of anthropology (and other social sciences) to interpret human behavior to decision-makers, or serving as consultants to agencies or groups of individuals who have the power to manipulate present and future circumstances of others.

Anthropologists advise on the dy-

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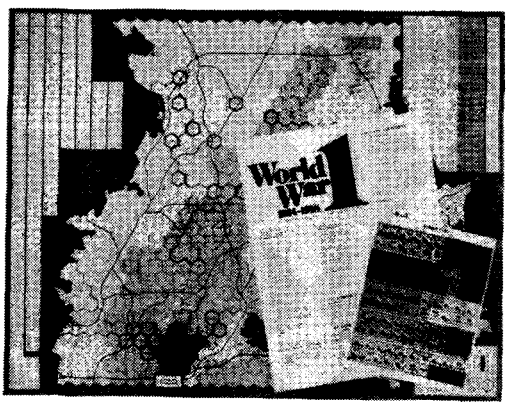

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namics of culture and culture change or on the impact which planned change for communities will have on the life-styles of others. They have advocated the legitimacy of cultural variation and the right of cultural enclaves to retain their traditions, language, values, and social organization, and all other aspects of their culture; they participate in decision-making regarding integration of varying life-styles within a given community setting; and they attempt to influence Government officials to take into account the minority as well as majority when planning national and international policies.

The anthropologists who do this type of work are often not as well known in the "traditional circles" of anthropology as are the traditionalists. They are, however, activists who (coming from strong academic backgrounds) believe in the worth of humans, and have taken their "elitist ivory-tower" studies back to the people who provided information that ultimately made possible the coveted PhD dissertation, or tenure-required monograph. They are not as much concerned with notoriety among their professional peers as with accountability to informant populations and the ways they might influence making life at least a little less harsh for all humanity. The following list of areas in which anthropologists are now or have been active is not all-inclusive, but rather represents a sampling of our less well-known extra-university works.

Educational Anthropology is a subdivision of anthropology concerned with improving social science content in all levels of public schools and in junior and senior college. It works at integrating knowledge of culture and culture variation at the lower grades and through college education (for example, courses have been developed to introduce concepts of anthropology and empirical knowledge of various peoples in elementary and junior high schools); at development of bicultural, bilingual education programs in some school districts, and multicultural and multilingual educational programs in others; at development of extension and evening courses for adult education programs. These have been accomplished by anthropologists willing to participate in the planning of these programs as well as in the teaching of subject matter, consulting with school boards at the local and state levels, and by working with the National Institutes of Education.

Medical Anthropology is a subdivision of anthropology concerned largely with improving health care delivery to low-income or isolated peoples; or with working for integrated health care systems such as use of traditional healing practices combined with Western modern

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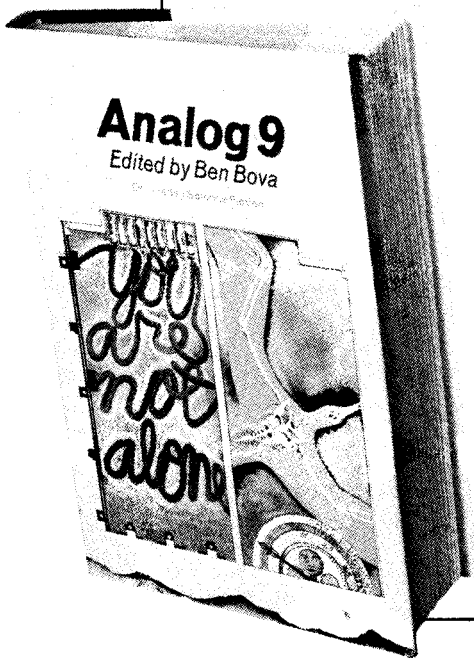

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ROGER ZELAZNY

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Big fat flakes down the night, silent night, windless night. And I never count them as storms unless there is wind. Not a sigh or a whimper, though. Just a cold, steady whiteness, drifting down outside the window, and a silence confirmed by gunfire, driven deeper now it had ceased. In the main room of the lodge the only sounds were the occasional hiss and sputter of the logs turning to ashes on the grate.

I sat in a chair turned sidewise from the table to face the door. A tool kit rested on the floor to my left. The helmet stood on the table, a lopsided basket of metal, quartz, porcelain and glass. If I heard the click of a microswitch followed by a humming sound from within it, then a faint light would come on beneath the meshing near to its forward edge and begin to blink rapidly. If these things occurred, there was a very strong possibility that I was going to die.

I had removed a black ball from my pocket when Larry and Bert had gone outside, armed, respectively, with a flame thrower and what looked like an elephant gun. Bert had also taken two grenades with him.

I unrolled the black ball, opening it out into a seamless glove, a dollop of something resembling moist putty stuck to its palm. Then I drew the glove on over my left hand and sat with it upraised, elbow resting on the arm of the chair. A small laser flash pistol in which I had very little faith lay beside my right hand on the tabletop, next to the helmet.

If I were to slap a metal surface with my left hand, the substance would adhere there, coming free of the glove. Two seconds later it would explode, and the force of the explosion would be directed in against the surface. Newton would claim his own by way of right-angled redistributions of the reaction, hopefully tearing lateral hell out of the contact surface. A smothercharge, it was called, and its possession came under concealed weapons and possession of burglary tools statutes in most places. The molecularly gimmicked goo, I decided, was great stuff. It was just the delivery system that left more to be desired.

Beside the helmet, next to the gun, in front of my hand, stood a small walkie-talkie. This was for purposes of warning Bert and Larry if I should hear the click of a microswitch followed by a humming sound, should see a light come on and begin to blink rapidly. Then they would know that Tom and Clay, with whom we had lost contact when the shooting began, had failed to destroy the enemy and doubtless lay lifeless at their stations now, a little over a kilometer to the south. Then they would know that they, too, were probably about to die.

I called out to them when I heard the click. I picked up the

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helmet and rose to my feet as its light began to blink.

But it was already too late.

The fourth place listed on the Christmas card I had sent Don Walsh the previous year was Peabody's Book Shop and Beer Stube in Baltimore, Maryland. Accordingly, on the last night in October I sat in its rearmost room, at the final table before the alcove with the door leading to the alley. Across that dim chamber, a woman dressed in black played the ancient upright piano, up-tempoing everything she touched. Off to my right, a fire wheezed and spewed fumes on a narrow hearth beneath a crowded mantelpiece overseen by an ancient and antlered profile. I sipped a beer and listened to the sounds.

I half-hoped that this would be one of the occasions when Don failed to show up. I had sufficient funds to hold me through spring and I did not really feel like working. I had summered farther north, was anchored now in the Chesapeake and was anxious to continue Caribbeanwards. A growing chill and some nasty winds told me I had tarried overlong in these latitudes. Still, the understanding was that I remain in the chosen bar until midnight. Two hours to go.

I ate a sandwich and ordered another beer. About halfway into it, I spotted Don approaching the entranceway, topcoat over his arm, head turning. I manufactured a matching quantity of surprise when he appeared beside my table with a, "Don! Is that really you?"

I rose and clasped his hand.

"Alan! Small world, or something like that. Sit down! Sit down!"

He settled onto the chair across from me, draped his coat over the one to his left.

"What are you doing in this town?" he asked.

"Just a visit," I answered. "Said hello to a few friends." I patted the scars, the stains of the venerable surface before me. "And this is my last stop. I'll be leaving in a few hours."

He chuckled.

"Why is it that you knock on wood?"

I grinned.

"I was expressing affection for one of Henry Mencken's favorite speakeasies."

"This place dates back that far?"

I nodded.

"It figures," he said. "You've got this thing for the past—or against the present. I'm never sure which."

"Maybe a little of both," I said. "I wish Mencken would stop in. I'd like his opinion on the present. What are you doing with it?"

"What?"

"The present. Here. Now."

"Oh." He spotted the waitress and ordered a beer. "Business trip," he said then. "To hire a consultant."

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"Oh. And how *is* business?"

"Complicated," he said. "complicated."

We lit cigarettes and after a while his beer arrived. We smoked and drank and listened to the music.

I've sung this song and I'll sing it again: the world is like an up-tempoed piece of music. Of the many changes which came to pass during my lifetime, it seems that the majority have occurred during the past few years. It also struck me that way several years ago, and I'd a hunch I might be feeling the same way a few years hence—that is, if Don's business did not complicate me off this mortal coil or condensor before then.

Don operates the second largest detective agency in the world, and he sometimes finds me useful because I do not exist. I do not exist now because I existed once at the time and the place where we attempted to begin scoring the wild ditty of our times. I refer to the World Data Bank project and the fact that I had had a significant part in that effort to construct a working model of the real world, accounting for everyone and everything in it. How well we succeeded and whether possession of the world's likeness does indeed provide its custodians with a greater measure of control over its functions, are questions my former colleagues still debate as the music grows more shrill and you can't see the maps for the pins. I made my decision back then and saw to it that I did not receive citizenship in that second world, a place which may now have become more important than the first. Exiled to reality, my own sojourns across the line are necessarily those of an alien guilty of illegal entry. I visit periodically because I go where I must to make my living. That is where Don comes in. The people I can become are often very useful when he has peculiar problems. Unfortunately, at that moment, it seemed that he did, just when the whole gang of me felt like turning down the volume and loafing.

We finished our drinks, got the bill, settled it.

"This way," I said, indicating the rear door, and he swung into his coat and followed me out.

"Talk here?" he asked, as we walked down the alley.

"Rather not," I said. "Public transportation, then private conversation."

He nodded and came along.

About three-quarters of an hour later we were in the saloon of the *Proteus* and I was making coffee. We were rocked gently by the Bay's chill waters, under a moonless sky. I'd only a pair of the smaller lights burning. Comfortable. On the water, aboard the *Proteus*, the crowding, the activities, the tempo, of life in the cities, on the land, are muted, slowed—fictionalized—by the metaphysical dis-

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tancing a few meters of water can provide. We alter the landscape with great facility, but the ocean has always seemed unchanged, and I suppose by extension we are infected with some feelings of timelessness whenever we set out upon her. Maybe that's one of the reasons I spend so much time there.

"First time you've had me aboard," he said. "Comfortable. Very."

"Thanks. Cream? Sugar?"

"Yes. Both."

We settled back with our steaming mugs and I said, "What have you got?"

"One case involving two problems," he said. "One of them sort of falls within my area of competence. The other does not. I was told that it is an absolutely unique situation and would require the services of a very special specialist."

"I'm not a specialist at anything but keeping alive."

His eyes came up suddenly and caught my own.

"I had always assumed that you knew an awful lot about computers," he said.

I looked away. That was hitting below the belt. I had never held myself out to him as an authority in that area, and there had always been a tacit understanding between us that my methods of manipulating circumstance and identity were not open to discussion. On the other hand, it was obvious to him that my knowledge of the system was both extensive and intensive. Still, I didn't like talking about it. So I moved to defend.

"Computer people are a dime a dozen," I said. "It was probably different in your time, but these days they start teaching computer science to little kids their first year in school. So, sure I know a lot about it. This generation, everybody does."

"You know that is not what I meant," he said. "Haven't you known me long enough to trust me a little more than that? The question springs solely from the case at hand. That's all."

I nodded. Reactions by their very nature are not always appropriate, and I had invested a lot of emotional capital in a heavy duty set. So, "OK, I know more about them than the school kids," I said.

"Thanks. That can be our point of departure." He took a sip of coffee. "My own background is in law and accounting, followed by the military, military intelligence and civil service, in that order. Then I got into this business. What technical stuff I know I've picked up along the way, a scrap here, a crash course there. I know a lot about what things can do, not so much about how they work. I did not understand the details on this one, so I want you to start at the top and explain things to me, for as far as you can go. I need the background review, and if you are able to furnish it I will also know

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that you are the man for the job. You can begin by telling me how the early space exploration robots worked—like, say, the ones they used on Venus."

"That's not computers," I said, "and for that matter, they weren't really robots. They were telefactoring devices."

"Tell me what makes the difference."

"A robot is a machine which carries out certain operations in accordance with a program of instructions. A telefactor is a slave machine operated by remote control. The telefactor functions in a feedback situation with its operator. Depending on how sophisticated you want to get, the links can be audio-visual, kinesthetic, tactile, even olfactory. The more you want to go in this direction, the more anthropomorphic you get in the thing's design. In the case of Venus, if I recall correctly, the human operator in orbit wore an exoskeleton which controlled the movements of the body, legs, arms and hands of the device on the surface below, receiving motion and force feedback through a system of airjet transducers. He had on a helmet controlling the slave device's television camera--set, obviously enough, in its turret—which filled his field of vision with the scene below. He also wore earphones connected with its audio pickup. I read the book he wrote later. He said that for long stretches of time, he would forget the cabin, forget that he was at the boss end of a control loop and actually feel as if he were stalking through that hellish landscape. I remember being very impressed by it, just being a kid, and I wanted a supertiny one all my own, so that I could wade around in puddles picking fights with microorganisms."

"Why?"

"Because there weren't any dragons on Venus. Anyhow, that is a telefactoring device, a thing quite distinct from a robot."

"I'm still with you," he said. "Now tell me the difference between the early telefactoring devices and the later ones."

I swallowed some coffee.

"It was a bit trickier with respect to the outer planets and their satellites," I said. "There, we did not have orbiting operators at first. Economics, and some unresolved technical problems. Mainly economics. At any rate, the devices were landed on the target worlds, but the operators stayed home. Because of this, there was of course a time lag in the transmissions along the control loop. It took a while to receive the on-site input, and then there was another time-lapse before the response movements reached the telefactor. We attempted to compensate for this in two ways. The first was by the employment of a simple wait-move, wait-move sequence. The second was more sophisticated and is actually the point

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where computers come into the picture in terms of participating in the control loop. It involved the setting up of models of known environmental factors, which were then enriched during the initial wait-move sequences. On this basis, the computer was then used to anticipate short-range developments. Finally, it could take over the loop and run it by a combination of 'predictor controls' and wait-move reviews. It still had to holler for human help though, when unexpected things came up. So, with the outer planets, it was neither totally automatic nor totally manual—nor totally satisfactory—at first."

"OK," he said, lighting a cigarette. "And the next step?"

"The next wasn't really a technical step forward in telefactoring. It was an economic shift. The purse strings were loosened and we could afford to send men out. We landed them where we could land them, and in many of the places where we could not we sent down the telefactors and orbited the men again. Like in the old days. The time lag problem was removed because the operator was on top of things once more. If anything, you can look at it as a reversion to earlier methods. It is what we still often do, though, and it works."

He shook his head.

"You left something out," he said, "between the computers and the bigger budget."

I shrugged.

"A number of things were tried during that period," I said, "but none of them proved as effective as what we already had going in the human-computer partnership with the telefactors."

"There was one project," he said, "which attempted to get around the time lag troubles by sending the computer along with the telefactor as part of the package. Only the computer wasn't exactly a computer and the telefactor wasn't exactly a telefactor. Do you know which one I am referring to?"

I lit a cigarette of my own while I thought about it, then, "I think you are talking about the Hangman," I said.

"That's right," he said, "and this is where I get lost. Can you tell me how it works?"

"Ultimately, it was a failure," I said.

"But it worked at first."

"Apparently. But only on the easy stuff, on Io. It conked out later and had to be written off as a failure, albeit a noble one. The venture was overly ambitious from the very beginning. What seems to have happened was that the people in charge had the opportunity to combine vanguard projects—stuff that was still under investigation and stuff that was extremely new. In theory it all seemed to dovetail so beautifully that they yielded to the temptation and incorporated too much. It started out well, but it fell apart later."

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"But what all was involved in the thing?"

"Lord! What wasn't? The computer that wasn't exactly a computer . . . OK, we'll start there. Last century, three engineers at the University of Wisconsin—Nordman, Parmentier and Scott—developed a device known as a superconductive tunnel junction neuristor. Two tiny strips of metal with a thin insulating layer between. Supercool it and it passed electrical impulses without resistance. Surround it with magnetized material and pack a mass of them together—billions—and what have you got?"

He shook his head.

"Well, for one thing you've got an impossible situation to schematize when considering all the paths and interconnections that may be formed. There is an obvious similarity to the structure of the brain. So, they theorized, you don't even attempt to hook up such a device. You pulse in data and let it establish its own preferential pathways, by means of the magnetic material's becoming increasingly magnetized each time the current passes through it, thus cutting the resistance. So the material establishes its own routes in a fashion analogous to the functioning of the brain when it is learning something. In the case of the Hangman, they used a setup very similar to this and they were able to pack over ten billion neuristor-type cells into a very small area—around a cubic foot. They aimed for that magic figure because that is approximately the number of nerve cells in the human brain. That is what I meant when I said that it wasn't really a computer. They were actually working in the area of artificial intelligence, no matter what they called it."

"If the thing had its own brain—computer or quasi-human—then it was a robot rather than a telefactor, right?"

"Yes and no and maybe," I said. "It was operated as a telefactor device here on Earth—on the ocean floor, in the desert, in mountainous country—as part of its programming. I suppose you could also call that its apprenticeship or kindergarten. Perhaps that is even more appropriate. It was being shown how to explore in difficult environments and to report back. Once it mastered this, then theoretically they could hang it out there in the sky without a control loop and let it report its own findings."

"At that point would it be considered a robot?"

"A robot is a machine which carries out certain operations in accordance with a program of instructions. The Hangman made its own decisions, you see. And I suspect that by trying to produce something that close to the human brain in structure and function the seemingly inevitable randomness of its model got included in. It wasn't just a machine following a pro-

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gram. It was too complex. That was probably what broke it down."

Don chuckled.

"Inevitable free will?"

"No. As I said, they had thrown too many things into one bag. Everybody and his brother with a pet project that might be fitted in seemed a supersalesman that season. For example, the psychophysics boys had a gimmick they wanted to try on it, and it got used. Ostensibly, it was a communications device. Actually, they were concerned as to whether the thing was truly sentient."

"Was it?"

"Apparently so, in a limited fashion. What they had come up with, to be made part of the initial telefactor loop, was a device which set up a weak induction field in the brain of the operator. The machine received and amplified the patterns of electrical activity being conducted in the Hangman's—might as well call it 'brain'—then passed them through a complex modulator and pulsed them into the induction field in the operator's head. I am out of my area now and into that of Weber and Fechner, but a neuron has a threshold at which it will fire, and below which it will not. There are some forty thousand neurons packed together in a square millimeter of the cerebral cortex, in such a fashion that each one has several hundred synaptic connections with others about it. At

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any given moment, some of them may be way below the firing threshold while others are in a condition Sir John Eccles once referred to as 'critically poised'—ready to fire. If just one is pushed over the threshold, it can affect the discharge of hundreds of thousands of others within twenty milliseconds. The pulsating field was to provide such a push in a sufficiently selective fashion to give the operator an idea as to what was going on in the Hangman's brain. And vice versa. The Hangman was to have its own built-in version of the same thing. It was also thought that this might serve to humanize it somewhat, so that it would better appreciate the significance of its work—to instill something like loyalty, you might say."

"Do you think this could have contributed to its later breakdown?"

"Possibly. How can you say in a one-of-a-kind situation like this? If you want a guess, I'd say yes. But it's just a guess."

"Uh-huh," he said, "and what were its physical capabilities?"

"Anthropomorphic design," I said, "both because it was originally telefactored and because of the psychological reasoning I just mentioned. It could pilot its own small vessel. No need for a life-support system, of course. Both it and the vessel were powered by fusion units, so that fuel was no real problem. Self-repairing. Capable of performing a great variety of sophisticated tests and measurements, of making observations, completing reports, learning new material, broadcasting its findings back here. Capable of surviving just about anywhere. In fact, it required less energy on the outer planets—less work for the refrigeration units, to maintain that supercooled brain in its midsection."

"How strong was it?"

"I don't recall all the specs. Maybe a dozen times as strong as a man, in things like lifting and pushing."

"It explored Io for us and started in on Europa."

"Yes."

"Then it began behaving erratically, just when we thought it had really learned its job."

"That sounds right," I said.

"It refused a direct order to explore Callisto, then headed out toward Uranus."

"Yes. It's been years since I read the reports . . ."

"The malfunction worsened after that. Long periods of silence interspersed with garbled transmissions. Now that I know more about its makeup, it almost sounds like a man going off the deep end."

"It seems similar."

"But it managed to pull itself together again for a brief while. It landed on Titania, began sending back what seemed like appropriate observation reports. This only lasted a short time, though. It went

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irrational once more, indicated that it was heading for a landing on Uranus itself, and that was it. We didn't hear from it after that. Now that I know about that mind-reading gadget I understand why a psychiatrist on this end could be so positive it would never function again."

"I never heard about that part."

"I did."

I shrugged.

"This was all around twenty years ago," I said, "and, as I mentioned, it has been a long while since I've read anything about it."

"The Hangman's ship crashed or landed, as the case may be, in the Gulf of Mexico," he said, "two days ago."

I just stared at him.

"It was empty," he said, "when they finally got out and down to it."

"I don't understand."

"Yesterday morning," he went on, "restaurateur Manny Burns was found beaten to death in the office of his establishment, the *Maison Saint-Michel*, in New Orleans."

"I still fail to see . . ."

"Manny Burns was one of the four original operators who programmed—pardon me, 'taught'—the Hangman."

The silence lengthened, dragged its belly on the deck.

"Coincidence . . .?" I finally said.

"My client doesn't think so."

"Who is your client?"

"One of the three remaining members of the training group. He is convinced that the Hangman has returned to Earth to kill its former operators."

"Has he made his fears known to his old employers?"

"No."

"Why not?"

"Because it would require telling them the reason for his fears."

"That being . . .?"

"He wouldn't tell me either."

"How does he expect you to do a proper job?"

"He told me what he considered a proper job. He wants two things done, neither of which requires a full case history. He wanted to be furnished with good bodyguards, and he wanted the Hangman found and disposed of. I have already taken care of the first part."

"And you want me to do the second?"

"That's right. You have confirmed my opinion that you are the man for the job."

"I see," I said. "Do you realize that if the thing is truly sentient this will be something very like murder? If it is not, of course, then it will only amount to the destruction of expensive government property."

"Which way do you look at it?"

"I look at it as a job," I said.

"You'll take it?"

"I need more facts before I can decide. Like . . . Who is your client? Who are the other oper-

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ators? Where do they live? What do they do? What—"

He raised his hand.

"First," he said, "the Honorable Jesse Brockden, Senior Senator from Wisconsin, is our client. Confidentiality, of course, is written all over it."

I nodded.

"I remember his being involved with the space program before he went into politics. I wasn't aware of the specifics, though. He could get government protection so easily—"

"To obtain it, he would apparently have to tell them something he doesn't want to talk about. Perhaps it would hurt his career. I simply do not know. He doesn't want them. He wants us."

I nodded again.

"What about the others? Do they want us, too?"

"Quite the opposite. They don't subscribe to Brockden's notions at all. They seem to think he is something of a paranoid."

"How well do they know one another these days?"

"They live in different parts of the country, haven't seen each other in years. Been in occasional touch, though."

"Kind of flimsy basis for that diagnosis, then."

"One of them *is* a psychiatrist."

"Oh. Which one?"

"Leila Thackery is her name. Lives in St. Louis. Works at the State Hospital there."

"None of them have gone to any authority, then—Federal or local?"

"That's right. Brockden contacted them when he heard about the Hangman. He was in Washington at the time. Got word on its return right away and managed to get the story killed. He tried to reach them all, learned about Burns in the process, contacted me, then tried to persuade the others to accept protection by my people. They weren't buying. When I talked to her, Dr. Thackery pointed out—quite correctly—that Brockden is a very sick man—"

"What's he got?"

"Cancer. In his spine. Nothing they can do about it once it hits there and digs in. He even told me he figures he has maybe six months to get through what he considers a very important piece of legislation—the new criminal rehabilitation act. I will admit that he did sound kind of paranoid when he talked about it. But hell! Who wouldn't? Dr. Thackery sees that as the whole thing, though, and she doesn't see the Burns killing as being connected with the Hangman. Thinks it was just a traditional robbery gone sour, thief surprised and panicky, maybe hopped-up, et cetera."

"Then she is not afraid of the Hangman?"

"She said that she is in a better position to know its mind than anyone else, and she is not especially concerned."

"What about the other operator?"

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"He said that Dr. Thackery may know its mind better than anyone else, but he knows its brain, and he isn't worried either."

"What did he mean by that?"

"David Fentris is a consulting engineer—electronics, cybernetics. He actually had something to do with the Hangman's design."

I got to my feet and went after the coffee pot. Not that I'd an overwhelming desire for another cup at just that moment. But I had known, had once worked with a David Fentris. And he had at one time been connected with the space program.

About fifteen years my senior, Dave had been with the Data Bank project when I had known him. Where a number of us had begun having second thoughts as the thing progressed, Dave had never been anything less than wildly enthusiastic. A wiry five-eight, white-cropped, gray eyes back of horn-rims and heavy glass, cycling between preoccupation and near-frantic darting, he had had a way of verbalizing half-completed thoughts as he went along, so that you might begin to think him a representative of that tribe which had come into positions of small authority by means of nepotism or politics. If you would listen a few more minutes though, you would begin revising your opinion as he started to pull his musings together into a rigorous framework. By the time he had finished you generally wondered why you hadn't seen it all along and what a guy like that was doing in a position of such small authority. Later, it might strike you, though, that he seemed sad whenever he wasn't enthusiastic about something, and while the gung-ho spirit is great for short-range projects, larger ventures generally require something more of equanimity. I wasn't at all surprised that he had wound up as a consultant. The big question now, of course, was would he remember me? True, my appearance was altered, my personality hopefully more mature, my habits shifted around. But would that be enough, should I have to encounter him as part of this job? That mind behind

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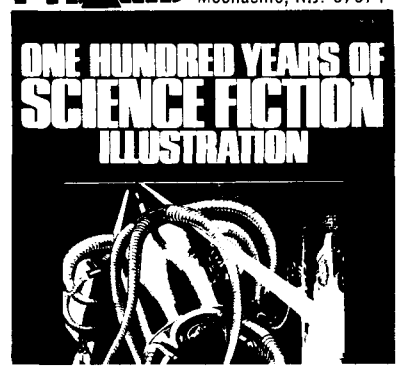

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those hornrims could do a lot of strange things with just a little data.

"Where does he live?" I asked.

"Memphis, and what's the matter?"

"Just trying to get my geography straight," I said. "Is Senator Brockden still in Washington?"

"No. He's returned to Wisconsin and is currently holed up in a lodge in the northern part of the state. Four of my people are with him."

"I see."

I refreshed our coffee supply and reseated myself. I didn't like this one at all and I resolved not to take it. I didn't like just giving Don a flat no, though. His assignments had become a very important part of my life, and this one was not mere legwork. It was obviously important to him, and he wanted me on it. I decided to look for holes in the thing, to find some way of reducing it to the simple bodyguard job already in progress.

"It does seem peculiar," I said, "that Brockden is the only one afraid of the device."

"Yes."

". . . And that he gives no reasons."

"True."

". . . Plus his condition, and what the doctor said about its effect on his mind."

"I have no doubt that he is neurotic," Don said. "Look at this."

He reached for his coat, withdrew a sheaf of papers from within it. He shuffled through them and extracted a single sheet, which he passed to me. It was a piece of Congressional letterhead stationery, with the message scrawled in longhand: "Don," it said, "I've got to see you. Frankenstein's monster has just come back from where we hung him and he's looking for me. The whole damn universe is trying to grind me up. Call me between eight and ten.—Jess." I nodded, started to pass it back, paused, then handed it over. Double damn it deeper than hell! I took a drink of coffee. I thought that I had long ago given up hope in such things, but I had noticed something which immediately troubled me. In the margin where they list such matters, I had seen that Jesse Brockden was on the committee for review of the Data Bank program. I recalled that that committee was supposed to be working on a series of reform recommendations. Offhand, I could not remember Brockden's position on any of the issues involved, but—oh hell! The thing was simply too big to alter significantly now . . . But it *was* the only real Frankenstein monster I cared about, and there was always the possibility . . . On the other hand—hell, again. What if I let him die when I might have saved him, and he had been the one who . . .?

I took another drink of coffee. I lit another cigarette. There might be a way of working it so that Dave didn't even come into the

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picture. I could talk to Leila Thackery first, check further into the Burns killing, keep posted on new developments, find out more about the vessel in the Gulf . . . I might be able to accomplish something, even if it was only the negation of Brockden's theory, without Dave's and my paths ever crossing.

"Have you got the specs on the Hangman?" I asked.

"Right here."

He passed them over.

"The police report on the Burns killing?"

"Here it is."

"The whereabouts of everyone involved, and some background on them?"

"Here."

"The place or places where I can reach you during the next few days—around the clock? This one may require some coordination."

He smiled and reached for his pen.

"Glad to have you aboard," he said.

I reached over and tapped the barometer. I shook my head.

The ringing of the phone awakened me. Reflex bore me across the room, where I took it on audio.

"Yes?"

"Mr. Donne? It is eight o'clock."

"Thanks."

I collapsed into the chair. I am what might be called a slow starter. I tend to recapitulate phylogeny every morning. Basic desires inched their ways through my gray matter to close a connection. Slowly, I extended a cold-blooded member and clicked my talons against a couple numbers. I croaked my desire for food and lots of coffee to the voice that responded. Half an hour later I would only have growled. Then I staggered off to the place of flowing waters to renew my contact with basics.

In addition to my normal adrenaline and blood-sugar bearishness, I had not slept much the night before. I had closed up shop after Don had left, stuffed my pockets with essentials, departed the *Proteus*, gotten myself over to the airport and onto a flight which took me to St. Louis in the dead, small hours of the dark. I was unable to sleep during the flight, thinking about the case, deciding on the tack I was going to take with Leila Thackery. On arrival, I had checked into the airport motel, left a message to be awakened at an unreasonable hour and collapsed.

As I ate, I regarded the fact-sheet Don had given me: Leila Thackery was currently single, having divorced her second husband a little over two years ago, was forty-six years old and lived in an apartment near to the hospital where she worked. Attached to the sheet was a photo which might have been ten years old. In it, she was brunette, light-eyed, barely on the right side of that border between

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ample and overweight, with fancy glasses straddling an upturned nose. She had published a number of books and articles with titles full of alienations, roles, transactions, social contexts and more alienations.

I hadn't had the time to go my usual route, becoming an entire new individual with a verifiable history. Just a name and a story, that's all. It did not seem necessary this time, though. For once, something approximating honesty actually seemed a reasonable approach.

I took a public vehicle over to her apartment building. I did not phone ahead, because it is easier to say no to a voice than to a person. According to the record, today was one of the days when she saw outpatients in her home. Her idea, apparently: break down the alienating institution image, remove resentments by turning the sessions into something more like social occasions, et cetera. I did not want all that much of her time, I had decided that Don could make it worth her while if it came to that, and I was sure my fellows' visits were scheduled to leave her with some small breathing space—*inter alia*, so to speak.

I had just located her name and apartment number amid the buttons in the entrance foyer when an old woman passed behind me and unlocked the door to the lobby. She glanced at me and held it open, so I went on in without ringing. The matter of presence, again.

I took the elevator to Leila's floor, the second. I located her door and knocked on it. I was almost ready to knock again when it opened, part-way.

"Yes?" she asked, and I revised my estimate as to the age of the photo. She looked just about the same.

"Dr. Thackery," I said, "my name is Donne. You could help me quite a bit with a problem I've got."

"What sort of problem?"

"It involves a device known as the Hangman."

She sighed and showed me a quick grimace. Her fingers tightened on the door.

"I've come a long way but I'll be easy to get rid of. I've only a few things I'd like to ask you about it."

"Are you with the Government?"

"No."

"Do you work for Brockden?"

"No, I'm something different."

"All right," she said. "Right now I've got a group session going. It will probably last around another half-hour. If you don't mind waiting down in the lobby, I'll let you know as soon as it is over. We can talk then."

"Good enough," I said. "Thanks."

She nodded, closed the door. I located the stairway and walked back down.

A cigarette later, I decided that the devil finds work for idle hands

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and thanked him for his suggestion. I strolled back toward the foyer. Through the glass, I read the names of a few residents of the fifth floor. I elevated up and knocked on one of the doors. Before it was opened I had my notebook and pad in plain sight.

"Yes?"—short, fiftyish, curious.

"My name is Stephen Foster, Mrs. Gluntz. I am doing a survey for the North American Consumers League. I would like to pay you for a couple minutes of your time, to answer some questions about products you use."

"Why— Pay me?"

"Yes, ma'am. Ten dollars. Around a dozen questions. It will just take a minute or two."

"All right." She opened the door wider. "Won't you come in?"

"No, thank you. This thing is so brief I'd just be in and out. The first question involves detergents—"

Ten minutes later I was back in the lobby adding the thirty bucks for the three interviews to the list of expenses I was keeping. When a situation is full of unpredictables and I am playing makeshift games, I like to provide for as many contingencies as I can.

Another quarter of an hour or so slipped by before the elevator opened and discharged three guys, young, young and middle-aged, casually dressed, chuckling over something. The big one on the nearest end strolled over and nodded.

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Indiana State University
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"You the fellow waiting to see Dr. Thackery?"

"That's right."

"She said to tell you to come on up now."

"Thanks."

I rode up again, returned to her door. She opened to my knock, nodded me in, saw me seated in a comfortable chair at the far end of her living room.

"Would you care for a cup of coffee?" she asked. "It's fresh. I made more than I needed."

"That would be fine. Thanks."

Moments later, she brought in a couple cups, delivered one to me and seated herself on the sofa to my left. I ignored the cream and sugar on the tray and took a sip.

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"You've gotten me interested," she said. "Tell me about it."

"OK. I have been told that the telefactor device known as the Hangman, now possibly possessed of an artificial intelligence, has returned to Earth—"

"Hypothetical," she said, "unless you know something I don't. I have been told that the Hangman's vehicle reentered and crashed in the Gulf. There is no evidence that the vehicle was occupied."

"It seems a reasonable conclusion, though."

"It seems just as reasonable to me that the Hangman sent the vehicle off toward an eventual rendezvous point many years ago and that it only recently reached that point, at which time the reentry program took over and brought it down."

"Why should it return the vehicle and strand itself out there?"

"Before I answer that," she said, "I would like to know the reason for your concern. News media?"

"No," I said. "I am a science writer—straight tech, popular and anything in between. But I am not after a piece for publication. I was retained to do a report on the psychological makeup of the thing."

"For whom?"

"A private investigation outfit. They want to know what might influence its thinking, how it might be likely to behave—if it has indeed come back. I've been doing a lot of homework, and I gathered there is a likelihood that its nuclear personality was a composite of the minds of its four operators. So, personal contacts seemed in order, to collect your opinions as to what it might be like. I came to you first for obvious reasons."

She nodded.

"A Mr. Walsh spoke with me the other day. He is working for Senator Brockden."

"Oh? I never go into an employer's business beyond what he's asked me to do. Senator Brockden is on my list though, along with a David Fentris."

"You were told about Manny Burns?"

"Yes. Unfortunate."

"That is apparently what set Jesse off. He is—how shall I put it? He is clinging to life right now, trying to accomplish a great many things in the time he has remaining. Every moment is precious to him. He feels the old man in the white nightgown breathing down his neck. Then the ship returns and one of us is killed. From what we know of the Hangman, the last we heard of it, it had become irrational. Jesse saw a connection, and in his condition the fear is understandable. There is nothing wrong with humoring him if it allows him to get his work done."

"But you don't see a threat in it?"

"No. I was the last person to monitor the Hangman before communications ceased, and I could see

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then what had happened. The first things that it had learned were the organization of perceptions and motor activities. Multitudes of other patterns had been transferred from the minds of its operators, but they were too sophisticated to mean much initially. Think of a child who has learned the Gettysburg Address. It is there in his head, that is all. One day, however, it may be important to him. Conceivably, it may even inspire him to action. It takes some growing up first, of course. Now think of such a child with a great number of conflicting patterns—attitudes, tendencies, memories—none of which are especially bothersome for so long as he remains a child. Add a bit of maturity, though—and bear in mind that the patterns originated with four different individuals, all of them more powerful than the words of even the finest of speeches, bearing as they do their own built-in feelings. Try to imagine the conflicts, the contradictions involved in being four people at once—"

"Why wasn't this imagined in advance?" I asked.

"Ah!" she said, smiling. "The full sensitivity of the neuristor brain was not appreciated at first. It was assumed that the operators were adding data in a linear fashion and that this would continue until a critical mass was achieved, corresponding to the construction of a model or picture of the world which would then serve as a point of departure for growth of the Hangman's own mind. And it did seem to check out this way. What actually occurred, however, was a phenomenon amounting to imprinting. Secondary characteristics of the operators' minds, outside the didactic situations, were imposed. These did not immediately become functional and hence were not detected. They remained latent until the mind had developed sufficiently to understand them. And then it was too late. It suddenly acquired four additional personalities and was unable to coordinate them. When it tried to compartmentalize them it went schizoid; when it tried to integrate them it went catatonic. It was cycling back and forth between these alternatives at the end. Then it just went silent. I felt it had undergone the equivalent of an epileptic seizure. Wild currents through that magnetic material would, in effect, have erased its mind, resulting in its equivalent of death or idiocy."

"I follow you," I said. "Now, just for the sake of playing games, I see the alternatives as a successful integration of all this material or the achievement of a viable schizophrenia. What do you think its behavior would be like if either of these were possible?"

"All right," she agreed. "As I just said, though, I think there were physical limitations to its retaining multiple personality structures for a

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very long period of time. If it did, however, it would have continued with its own plus replicas of the four operators', at least for awhile. The situation would differ radically from that of a human schizoid of this sort in that the additional personalities were valid images of genuine identities rather than self-generated complexes which had become autonomous. They might continue to evolve, they might degenerate, they might conflict to the point of destruction or gross modification of any or all of them. In other words, no prediction is possible as to the nature of whatever might remain."

"Might I venture one?"

"Go ahead."

"After considerable anxiety, it masters them. It asserts itself. It beats down this quartet of demons which has been tearing it apart, acquiring in the process an all-consuming hatred for the actual individuals responsible for this turmoil. To free itself totally, to revenge itself, to work its ultimate catharsis, it resolves to seek them out and destroy them."

She smiled.

"You have just dispensed with the 'viable schizophrenia' you conjured up, and you have now switched over to its pulling through and becoming fully autonomous. That is a different situation, no matter what strings you put on it."

"OK, I accept the charge. But what about my conclusion?"

"You are saying that if it did pull through, it would hate us. That strikes me as an unfair attempt to invoke the spirit of Sigmund Freud: Oedipus and Electra in one being, out to destroy all its parents—the authors of every one of its tensions, anxieties, hangups, burned into the impressionable psyche at a young and defenseless age. Even Freud didn't have a name for that one. What should we call it?"

"A Hermacis complex?" I suggested.

"Hermacis?"

"Hermaphroditus having been united in one body with the nymph Salmacis. I've just done the same with their names. That being would then have had four parents against whom to react."

"Cute," she said, smiling. "If the liberal arts do nothing else they provide engaging metaphors for the thinking they displace. This one is unwarranted and overly anthropomorphic, though. You wanted my opinion. All right. If the Hangman pulled through at all it could only have been by virtue of that neuristor brain's differences from the human brain. From my own professional experience, a human could not pass through a situation like that and attain stability. If the Hangman did, it would have to have resolved all the contradictions and conflicts, to have mastered and understood the situation so thoroughly that I do not believe whatever remained could involve that

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sort of hatred. The fear, the uncertainty, the things that feed hate would have been analyzed, digested, turned to something more useful. There would probably be distaste, and possibly an act of independence, of self-assertion. That was why I suggested its return of the ship."

"It is your opinion, then, that if the Hangman exists as a thinking individual today, this is the only possible attitude it would possess toward its former operators? It would want nothing more to do with you?"

"That is correct. Sorry about your Hermacis complex. But in this case we must look to the brain, not the psyche. And we see two things: schizophrenia would have destroyed it, and a successful resolution of its problem would preclude vengeance. Either way, there is nothing to worry about."

How could I put it tactfully? I decided that I could not.

"All of this is fine," I said, "for as far as it goes. But getting away from both the purely psychological and the purely physical, could there be a particular reason for its seeking your deaths—that is, a plain old-fashioned motive for a killing, based on events rather than having to do with the way its thinking equipment goes together?"

Her expression was impossible to read, but considering her line of work I had expected nothing less.

"What events?" she said.

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"I have no idea. That's why I asked."

She shook her head.

"I'm afraid that I don't either."

"Then that about does it," I said. "I can't think of anything else to ask you."

She nodded.

"And I can't think of anything else to tell you."

I finished my coffee, returned the cup to the tray.

"Thanks, then," I said, "for your time, for the coffee. You have been very helpful."

I rose. She did the same.

"What are you going to do now?" she asked.

"I haven't quite decided," I said. "I want to do the best report I can.

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Have you any suggestions on that?"

"I suggest that there isn't any more to learn, that I have given you the only possible constructions the facts warrant."

"You don't feel David Fentris could provide any additional insights?"

She snorted, then sighed.

"No," she said, "I do not think he could tell you anything useful."

"What do you mean? From the way you say it . . ."

"I know. I didn't mean to. Some people find comfort in religion. Others . . . you know. Others take it up late in life with a vengeance and a half. They don't use it quite the way it was intended. It comes to color all their thinking."

"Fanaticism?" I said.

"Not exactly. A misplaced zeal. A masochistic sort of thing. Hell! I shouldn't be diagnosing at a distance—or influencing your opinion. Forget what I said. Form your own opinion when you meet him."

She raised her head, appraising my reaction.

"Well," I said, "I am not at all certain that I am going to see him. But you have made me curious. How can religion influence engineering?"

"I spoke with him after Jesse gave us the news on the vessel's return," she said. "I got the impression at the time that he feels we were tampering in the province of the Almighty by attempting the creation of an artificial intelligence. That our creation should go mad was only appropriate, being the work of imperfect man. He seemed to feel that it would be fitting if it had come back for retribution, as a sign of judgment upon us."

"Oh," I said.

She smiled then. I returned it.

"Yes," she said, "but maybe I just got him in a bad mood. Maybe you should go see for yourself."

Something told me to shake my head—a bit of a difference between this view of him, my recollections and Don's comment that Dave had said he knew its brain and was not especially concerned. Somewhere among these lay something I felt I should know, felt I should learn without seeming to pursue. So, "I think I have enough right now," I said. "It was the psychological side of things I was supposed to cover, not the mechanical—or the theological. You have been extremely helpful. Thanks again."

She carried her smile all the way to the door.

"If it is not too much trouble," she said, as I stepped into the hall, "I would like to learn how this whole thing finally turns out—or any interesting developments, for that matter."

"My connection with the case ends with this report," I said, "and I am going to write it now. Still, I may get some feedback."

"You have my number . . .?"

"Probably, but . . ."

I already had it, but I jotted it

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again, right after Mrs. Gluntz' answers to my inquiries on detergents.

Moving in a rigorous line, I made beautiful connections for a change. I headed directly for the airport, found a flight aimed at Memphis, bought passage and was the last to board. Tenscore seconds, perhaps, made all the difference. Not even a tick or two to spare for checking out of the motel. No matter. The good head doctor had convinced me that, like it or not, David Fentris was next, damn it. I had too strong a feeling that Leila Thackery had not told me the entire story. I had to take a chance, to see these changes in the man for myself, to try to figure out how they related to the Hangman. For a number of reasons, I'd a feeling they might.

I disembarked into a cool, partly overcast afternoon, found transportation almost immediately and set out for Dave's office address. A before-the-storm feeling came over me as I entered and crossed the town. A dark wall of clouds continued to build in the west. Later, standing before the building where Dave did business, the first few drops of rain were already spattering against its dirty brick front. It would take a lot more than that to freshen it, though, or any of the others in the area. I would have thought he'd have come a little farther than this by now. I shrugged off some moisture and went inside.

The directory gave me directions, the elevator elevated me, my feet found the way to his door. I knocked on it.

After a time, I knocked again and waited again. Again, nothing. So I tried it, found it open and went on in.

It was a small, vacant waiting room, green-carpeted. The reception desk was dusty. I crossed and peered around the plastic partition behind it.

The man had his back to me. I drummed my knuckles against the partitioning. He heard it and turned.

"Yes?"

Our eyes met, his still framed by hornrims and just as active; glasses thicker, hair thinner, cheeks a trifle hollower. His question mark quivered in the air, and nothing in his gaze moved to replace it with recognition. He had been bending over a sheaf of schematics; a lopsided basket of metal, quartz, porcelain and glass rested on a nearby table.

"My name is Donne, John Donne," I said. "I am looking for David Fentris."

"I am David Fentris."

"Good to meet you," I said, crossing to where he stood. "I am assisting in an investigation concerning a project with which you were once associated—"

He smiled and nodded, accepted my hand and shook it.

"—The Hangman, of course," he

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said. "Glad to know you, Mr. Donne."

"Yes, the Hangman," I said. "I am doing a report . . ."

". . . And you want my opinion as to how dangerous it is. Sit down." He gestured toward a chair at the end of his work bench. "Care for a cup of tea?"

"No thanks."

"I'm having one."

"Well, in that case . . ."

He crossed to another bench.

"No cream. Sorry."

"That's all right. —How did you know it involved the Hangman?"

He grinned as he brought my cup.

"Because it's come back," he said, "and it's the only thing I've been connected with that warrants that much concern."

"Do you mind talking about it?"

"Up to a point, no."

"What's the point?"

"If we get near it, I'll let you know."

"Fair enough. How dangerous *is* it?"

"I would say that it is harmless," he replied, "except to three persons."

"Formerly four?"

"Precisely."

"How come?"

"We were doing something we had no business doing."

"That being . . .?"

"For one thing, attempting to create an artificial intelligence."

"Why had you no business doing that?"

"A man with a name like yours shouldn't have to ask."

I chuckled.

"If I were a preacher," I said, "I would have to point out that there is no biblical injunction against it—unless you've been worshipping it on the sly."

He shook his head.

"Nothing that simple, that obvious, that explicit. Times have changed since the Good Book was written, and you can't hold with a purely Fundamentalist approach in complex times. What I was getting at was something a little more abstract. A form of pride, not unlike the classical *hubris*—the setting up of oneself on a level with the Creator."

"Did you feel that—pride?"

"Yes."

"Are you sure it wasn't just enthusiasm for an ambitious project that was working well?"

"Oh, there was plenty of that. A manifestation of the same thing."

"I do seem to recall something about man being made in the Creator's image, and something else about trying to live up to that. It would seem to follow that exercising one's capacities along similar lines would be a step in the right direction—an act of conformance with the Divine Ideal, if you'd like."

"But I don't like. Man cannot really create. He can only rearrange what is already present. Only God can create."

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"Then you have nothing to worry about."

He frowned, then, "No," he said. "Being aware of this and still trying is where the presumption comes in."

"Were you really thinking that way when you did it? Or did all this occur to you after the fact?"

"I am no longer certain."

"Then it would seem to me that a merciful God would be inclined to give you the benefit of the doubt."

He gave me a wry smile.

"Not bad, John Donne. But I feel that judgment may already have been entered and that we may have lost four to nothing."

"Then you see the Hangman as an avenging angel?"

"Sometimes. Sort of. I see it as being returned to exact a penalty."

"Just for the record," I said, "if the Hangman had had full access to the necessary equipment and was able to construct another unit such as itself, would you consider it guilty of the same thing that is bothering you?"

He shook his head.

"Don't get all cute and Jesuitical with me, Donne. I'm not that far away from fundamentals. Besides, I'm willing to admit I might be wrong and that there may be other forces driving it to the same end."

"Such as?"

"I told you I'd let you know when we reached a certain point. That's it."

"OK," I said. "But that sort of blank-walls me, you know. The people I am working for would like to protect you people. They want to stop the Hangman. I was hoping you would tell me a little more—if not for your own sake, then for the others'. They might not share your philosophical sentiments, and you have just admitted you may be wrong. Despair, by the way, is also considered a sin by a great number of theologians."

He sighed and stroked his nose, as I had often seen him do in times long past.

"What do you do, anyhow?" he asked me.

"Me, personally? I'm a science writer. I'm putting together a report on the device for the agency that wants to do the protecting. The better my report, the better their chances."

He was silent for a time, then. "I read a lot in the area, but I don't recognize your name," he said.

"Most of my work has involved petrochemistry and marine biology," I said.

"Oh. You were a peculiar choice then, weren't you?"

"Not really. I was available, and the boss knows my work, knows I'm good."

He glanced across the room, to where a stack of cartons partly obscured what I then realized to be a remote access terminal. OK. If he decided to check out my credentials now, John Donne would fall apart.

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It seemed a hell of a time to get curious, though, *after* sharing his sense of sin with me. He must have thought so too, because he did not look that way again.

"Let me put it this way," he finally said, and something of the old David Fentris at his best took control of his voice. "For one reason or the other, I believe that it wants to destroy its former operators. If it is the judgment of the Almighty, that's all there is to it. It will succeed. If not, however, I don't want any outside protection. I've done my own repenting and it is up to me to handle the rest of the situation myself, too. I will stop the Hangman personally, right here, before anyone else is hurt."

"How?" I asked him.

He nodded toward the glittering helmet.

"With that," he said.

"How?" I repeated.

"Its telefactor circuits are still intact. They have to be. They are an integral part of it. It could not disconnect them without shutting itself down. If it comes within a quarter-mile of here, that unit will be activated. It will emit a loud humming sound and a light will begin to blink behind that meshing beneath the forward ridge. I will then don the helmet and take control of the Hangman. I will bring it here and disconnect its brain."

"How would you do the disconnect?"

He reached for the schematics he had been looking at when I had come in.

"Here," he said. "The thoracic plate has to be unlugged. There are four subunits that have to be uncoupled. Here, here, here and here."

He looked up.

"You would have to do them in sequence though, or it could get mighty hot," I said. "First this one, then these two. Then the other."

When I looked up again, the gray eyes were fixed on my own.

"I thought you were in petrochemistry and marine biology," he said.

"I am not really 'in' anything," I said. "I am a tech writer, with bits and pieces from all over—and I did have a look at these before, when I accepted the job."

"I see."

"Why don't you bring the space agency in on this?" I said, working to shift ground. "The original telefactoring equipment had all that power and range—"

"It was dismantled a long time ago," he said. "I thought you were with the Government."

I shook my head.

"Sorry. I didn't mean to mislead you. I am on contract with a private investigation outfit."

"Uh-huh. Then that means Jesse. Not that it matters. You can tell him that one way or the other everything is being taken care of."

"What if you are wrong on the supernatural," I said, "but correct

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on the other? Supposing it is coming under the circumstances you feel it proper to resist? But supposing you are not next on its list? Supposing it gets to one of the others next instead of you? If you are so sensitive about guilt and sin, don't you think that you would be responsible for that death—if you could prevent it by telling me just a little bit more? If it is confidentiality you are worried about—"

"No," he said. "You cannot trick me into applying my principles to a hypothetical situation which will only work out the way that you want it to. Not when I am certain that it will not arise. Whatever moves the Hangman, it will come to me next. If I cannot stop it, then it cannot be stopped until it has completed its job."

"How do you know that you are next?"

"Take a look at a map," he said. "It landed in the Gulf. Manny was right there in New Orleans. Naturally, he was first. The Hangman can move underwater like a controlled torpedo, which makes the Mississippi its logical route for inconspicuous travel. Proceeding up it then, here I am in Memphis. Then Leila, up in St. Louis, is obviously next after me. It can worry about getting to Washington after that."

I thought about Senator Brockden in Wisconsin and decided it would not even have that problem. All of them were fairly accessible, when you thought of the situation in terms of river travel.

"But how is it to know where you all are?" I asked.

"Good question," he said. "Within a limited range, it was once sensitive to our brain waves, having an intimate knowledge of them and the ability to pick them up. I do not know what that range would be today. I might have been able to construct an amplifier to extend this area of perception. But to be more mundane about it, I believe that it simply consulted the Data Bank's national directory. There are booths all over, even on the waterfront. It could have hit one late at night and gimmicked it. It certainly had sufficient identifying information—and engineering skill."

"Then it seems to me the best bet for all of you would be to move away from the river till this business is settled. That thing won't be able to stalk about the countryside very long without being noticed."

"It would find a way. It is extremely resourceful. At night, in an overcoat, a hat, it could pass. It requires nothing that a man would need. It could dig a hole and bury itself, stay underground during daylight. It could run without resting all night long. There is no place it could not reach in a surprisingly short while. No, I must wait here for it."

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"Let me put it as bluntly as I can," I said. "If you are right that it is a divine avenger, I would say that it smacks of blasphemy to try to tackle it. On the other hand, if it is not, then I think you are guilty of jeopardizing the others by withholding information that would allow us to provide them with a lot more protection than you are capable of giving them all by yourself."

He laughed.

"I'll just have to learn to live with that guilt too, as they do with theirs," he said. "After I've done my best, they deserve anything they get."

"It was my understanding," I said, "that even God doesn't judge people until after they're dead—if you want another piece of presumption to add to your collection."

He stopped laughing and studied my face.

"There is something familiar about the way you talk, the way you think," he said. "Have we ever met before?"

"I doubt it. I would have remembered."

He shook his head.

"You've got a way of bothering a man's thinking that rings a faint bell," he went on. "You trouble me, sir."

"That was my intention."

"Are you staying here in town?"

"No."

"Give me a number where I can reach you, will you? If I have any new thoughts on this thing I'll call you."

"I wish you would have them now if you are going to have them."

"No," he said, "I've got some thinking to do. Where can I get hold of you later?"

I gave him the name of the motel I was still checked into in St. Louis, I could call back periodically for messages.

"All right," he said, and he moved toward the partition by the reception area and stood beside it.

I rose and followed him, passing into that area and pausing at the door to the hall.

"One thing . . ." I said.

"Yes?"

"If it does show up and you do stop it, will you call me and tell me that?"

"Yes, I will."

"Thanks then—and good luck."

Impulsively, I extended my hand. He gripped it and smiled faintly.

"Thank you, Mr. Donne."

Next. Next, next, next . . .

I couldn't budge Dave, and Leila Thackery had given me everything she was going to. No real sense in calling Don yet—not until I had more to say. I thought it over on my way back to the airport. The pre-dinner hours always seem best for talking to people in any sort of official capacity, just as the night seems best for dirty work. Heavily

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psychological, but true nevertheless. I hated to waste the rest of the day if there was anyone else worth talking to before I called Don. Going through the folder, I decided that there was.

Manny Burns had a brother, Phil. I wondered how worthwhile it might be to talk with him. I could make it to New Orleans at a sufficiently respectable hour, learn whatever he was willing to tell me, check back with Don for new developments and then decide whether there was anything I should be about with respect to the vessel itself. The sky was gray and leaky above me. I was anxious to flee its spaces. So I decided to do it. I could think of no better stone to upturn at the moment.

At the airport, I was ticketed quickly, in time for another close connection. Hurrying to reach my flight, my eyes brushed over a half-familiar face on the passing escalator. The reflex reserved for such occasions seemed to catch us both, because he looked back too, with the same eyebrow twitch of startle and scrutiny. Then he was gone. I could not place him, though. The half-familiar face becomes a familiar phenomenon in a crowded, highly mobile society. I sometimes think that this is all that will eventually remain of any of us: patterns of features, some a trifle more persistent than others, impressed on the flow of bodies. A small town boy in a big city, Thomas Wolfe must long ago have felt the same thing when he had coined the word *manswarm*. It might have been someone I had once met briefly, or simply someone or someone like someone I had passed on sufficient other occasions such as this.

As I flew the unfriendly skies out of Memphis, I mulled over musings past on artificial intelligence, or AI as they have tagged it in the think box biz. When talking about computers, the AI notion had always seemed hotter than I deemed necessary, partly because of semantics. The word "intelligence" has all sorts of tag-along associations of the non-physical sort. I suppose it goes back to the fact that early discussions and conjectures concerning it made it sound as if the potential for intelligence was always present in the array of gadgets, and the correct procedures, the right programs, simply had to be found to call it forth. When you looked at it that way, as many did, it gave rise to an uncomfortable *déjà vu*—namely, vitalism. The philosophical battles of the Nineteenth Century were hardly so far behind that they had been forgotten, and the doctrine which maintained that life is caused and sustained by a vital principle apart from physical and chemical forces and that life is self-sustaining and self-evolving, had put up quite a fight before Darwin and his successors had produced triumph after triumph for the mechanistic view. Then vitalism

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sort of crept back into things again when the AI discussions arose in the middle of the past century. It would seem that Dave had fallen victim to it, and that he had come to believe he had helped provide an unsanctified vessel and filled it with something intended only for those things which had made the scene in the first chapter of Genesis.

With computers it was not quite as bad as with the Hangman though, because you could always argue that no matter how elaborate the program it was basically an extension of the programmer's will and the operations of causal machines merely represented functions of intelligence, rather than intelligence in its own right backed by a will of its own. And there was always Gödel for a theoretical *cordon sanitaire*, with his demonstration of the true but mechanically unprovable proposition. But the Hangman was quite different. It had been designed along the lines of a brain and at least partly educated in a human fashion; and to further muddy the issue with respect to anything like vitalism, it had been in direct contact with human minds from which it might have acquired almost anything—including the spark that set it on the road to whatever selfhood it may have found. What did that make it? Its own creature? A fractured mirror reflecting a fractured humanity? Both? Or neither? I certainly could not say, but I wondered how much of its 'self' had been truly its own. It had obviously acquired a great number of functions, but was it capable of having real feelings? Could it, for example, feel something like love? If not, then it was still only a collection of complex abilities, and not a thing with all the tag-along associations of the nonphysical sort which made the word "intelligence" such a prickly item in AI discussions; and if it were capable of, say, something like love, and if I were Dave, I would not feel guilty about having helped to bring it into being. I would feel proud, though not in the fashion he was concerned about, and I would also feel humble. Offhand though, I do not know how intelligent I would feel, because I am still not sure what the hell intelligence is.

The daysend sky was clear when we landed. I was into town before the sun had finished setting, and on Philip Burns' doorstep just a little while later.

My ring was answered by a girl, maybe seven or eight years old. She fixed me with large brown eyes and did not say a word.

"I would like to speak with Mr. Burns," I said.

She turned and retreated around a corner.

A heavyset man, slacked and undershirted, bald about halfway back and very pink, padded into the hall moments later and peered at me.

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He bore a folded newssheet in his left hand.

"What do you want?" he asked.

"It's about your brother," I said.

"Yeah?"

"Well, I wonder if I could come in? It's kind of complicated."

He opened the door. But instead of letting me in, he came out.

"Tell me about it out here," he said.

"OK, I'll be quick. I just wanted to find out whether he ever spoke with you about a piece of equipment he once worked with called the Hangman."

"Are you a cop?"

"No."

"Then what's your interest?"

"I am working for a private investigation agency trying to track down some equipment once associated with the project. It has apparently turned up in this area and it could be rather dangerous."

"Let's see some identification."

"I don't carry any."

"What's your name?"

"John Donne."

"And you think my brother had some stolen equipment when he died? Let me tell you something—"

"No. Not stolen," I said, "and I don't think he had it."

"What then?"

"It was—well, robotic in nature. Because of some special training Manny once received, he might have had a way of detecting it. He might even have attracted it. I just want to find out whether he had said anything about it. We are trying to locate it."

"My brother was a respectable businessman, and I don't like accusations. Especially right after his funeral, I don't. I think I'm going to call the cops and let them ask *you* a few questions."

"Just a minute," I said. "Supposing I told you we had some reason to believe it might have been this piece of equipment that killed your brother?"

His pink turned to bright red and his jaw muscles formed sudden ridges. I was not prepared for the stream of profanities that followed. For a moment, I thought he was going to take a swing at me.

"Wait a second," I said when he paused for breath. "What did I say?"

"You're either making fun of the dead or you're stupider than you look!"

"Say I'm stupid. Then tell me why."

He tore at the paper he carried, folded it back, found an item, thrust it at me.

"Because they've got the guy who did it! That's why," he said.

I read it. Simple, concise, to the point. Today's latest. A suspect had confessed. New evidence had corroborated it. The man was in custody. A surprised robber who had lost his head and hit too hard, hit too many times. I read it over again. I nodded as I passed it back.

"Look, I'm sorry," I said. "I

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really didn't know about this."

"Get out of here," he said. "Go on."

"Sure."

"Wait a minute."

"What?"

"That's his little girl who answered the door."

"I'm very sorry."

"So am I. But I know her Daddy didn't take your damned equipment."

I nodded and turned away.

I heard the door slam behind me.

After dinner, I checked into a small hotel, called for a drink and stepped into the shower. Things were suddenly a lot less urgent than they had been earlier. Senator Brockden would doubtless be pleased to learn that his initial estimation of events had been incorrect. Leila Thackery would give me an I-told-you-so smile when I called her to pass along the news—a thing I now felt obliged to do. Don might or might not want me to keep looking for the device now that the threat had been lessened. It would depend on the Senator's feelings on the matter, I supposed. If urgency no longer counted for as much, Don might want to switch back to one of his own, fiscally less burdensome operatives. Toweling down, I caught myself whistling. I felt almost off the hook.

Later, drink beside me, I paused before punching out the number he had given me and hit the sequence for my motel in St. Louis instead. Merely a matter of efficiency, in case there was a message worth adding to my report.

A woman's face appeared on the screen and a smile appeared on her face. I wondered whether she would always smile whenever she heard a bell ring, or if the reflex was eventually extinguished in advanced retirement. It must be rough, being afraid to chew gum, yawn or pick your nose.

"Airport Accommodations," she said. "May I help you?"

"This is Donne. I'm checked into Room 106," I said. "I'm away right now and I wondered whether there had been any messages for me."

"Just a moment," she said, checking something off to her left. Then, "Yes," she continued, consulting a piece of paper she now held. "You have one on tape. But it is a little peculiar. It is for someone else in care of you."

"Oh? Who is that?"

She told me and I exercised self-control.

"I see," I said. "I'll bring him around later and play it for him. Thank you."

She smiled again and made a good-bye noise and I did the same and broke the connection.

So Dave had seen through me after all . . . Who else could have that number *and* my real name?

I might have given her some line or other and had her transmit the

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thing. Only I was not certain but that she might be a silent party to the transmission, should life be more than usually boring for her at that moment. I had to get up there myself, as soon as possible, and personally see that the thing was erased.

I took a big swallow of my drink, then fetched the folder on Dave. I checked out his number—there were two, actually—and spent fifteen minutes trying to get hold of him. No luck.

OK. Good-bye New Orleans, good-bye peace of mind. This time I called the airport and made a reservation. Then I chugged the drink, put myself in order, gathered up my few possessions and went to check out again. Hello Central . . .

During my earlier flights that day I had spent time thinking about Teilhard de Chardin's ideas on the continuation of evolution within the realm of artifacts, matching them against Gödel on mechanical undecidability, playing epistemological games with the Hangman as a counter, wondering, speculating, even hoping, hoping that truth lay with the nobler part, that the Hangman, sentient, had made it back, sane, that the Burns killing had actually been something of the sort that now seemed to be the case, that the washed-out experiment had really been a success of a different sort, a triumph, a new link or fob for the chain of being . . . And Leila had not been wholly discouraging with respect to the neuristor-type brain's capacity for this . . . Now, though, now I had troubles of my own, and even the most heartening of philosophical vistas is no match for, say, a toothache, if it happens to be your own. Accordingly, the Hangman was shunted aside and the stuff of my thoughts involved, mainly, myself. There was, of course, the possibility that the Hangman had indeed showed up and Dave had stopped it and then called to report it as he had promised. However, he had used my name.

There was not too much planning that I could do until I received the substance of the communication. It did not seem that as professedly religious a man as Dave would suddenly be contemplating the blackmail business. On the other hand, he was a creature of sudden enthusiasms and had already undergone one unanticipated conversion. It was difficult to say . . . His technical background plus his knowledge of the Data Bank program did put him in an unusually powerful position should he decide to mess me up. I did not like to think of some of the things I have done to protect my nonperson status; I especially did not like to think of them in connection with Dave, whom I not only still respected but still liked. Since self-interest dominated while actual planning was precluded, my

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thoughts tooled their way into a more general groove.

It was Karl Mannheim, a long while ago, who made the observation that radical, revolutionary and progressive thinkers tend to employ mechanical metaphors for the state, whereas those of conservative inclination make vegetable analogies. He said it well over a generation before the cybernetics movement and the ecology movement beat their respective paths through the wilderness of general awareness. If anything, it seemed to me that these two developments served to elaborate the distinction between a pair of viewpoints which, while no longer necessarily tied in with the political positions Mannheim assigned them, do seem to represent a continuing phenomenon in my own time. There are those who see social/economic/ecological problems as malfunctions which can be corrected by simple repair, replacement or streamlining—a kind of linear outlook where even innovations are considered to be merely additive. Then there are those who sometimes hesitate to move at all, because their awareness follows events in the directions of secondary and tertiary effects as they multiply and cross-fertilize throughout the entire system. I digress to extremes. The cyberneticists have their multiple feedback loops, though it is never quite clear how they know what kind of, which and how many to install, and the ecological gestaltists do draw lines representing points of diminishing returns, though it is sometimes equally difficult to see how they assign their values and priorities. Of course they need each other, the vegetable people and the tinker toy people. They serve to check one another, if nothing else. And while occasionally the balance dips, the tinkerers have, in general, held the edge for the past couple centuries. However, today's can be just as politically conservative as the vegetable people Mannheim was talking about, and they are the ones I fear most at the moment. They are the ones who saw the Data Bank program, in its present extreme form, as a simple remedy for a great variety of ills and a provider of many goods. Not all of the ills have been remedied, however, and a new brood has been spawned by the program itself. While we need both kinds, I wish that there had been more people interested in tending the garden of state rather than overhauling the engine of state when the program was inaugurated. Then I would not be a refugee from a form of existence I find repugnant, and I would not be concerned whether a former associate had discovered my identity.

Then, as I watched the lights below, I wondered . . . Was I a tinkerer because I would like to further alter the prevailing order, into something more comfortable on my

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anarchic nature? Or was I a vegetable dreaming I was a tinkerer? I could not make up my mind. The garden of life never seems to confine itself to the plots philosophers have laid out for its convenience. Maybe a few more tractors would do the trick.

I pressed the button. The tape began to roll. The screen remained blank. I heard Dave's voice ask for John Donne in Room 106 and I heard him told that there was no answer. Then I heard him say that he wanted to record a message, for someone else, in care of Donne, that Donne would understand. He sounded out of breath. The girl asked him whether he wanted visual, too. He told her to turn it on. There was a pause. Then she told him go ahead. Still no picture. No words either. His breathing and a slight scraping noise. Ten seconds. Fifteen . . .

". . . Got me," he finally said, and he mentioned that name again. ". . . Had to let you know I'd figured you out, though . . . It wasn't any particular mannerism—any single thing you said . . . Just your general style—thinking, talking—the electronics—everything—after I got more and more bothered by the familiarity—after I checked you on petrochem—and marine bio—Wish I knew what you've really been up to all these years . . . Never know now. But I wanted you—to know—you hadn't put one—over on me." There followed another quarter-minute of heavy breathing, climaxed by a racking cough. Then a choked, "Said too much—too fast—too soon . . . All used up . . ."

The picture came on then. He was slouched before the screen, head resting on his arms, blood all over him. His glasses were gone and he was squinting and blinking. The right side of his head looked pulpy and there was a gash on his left cheek and one on his forehead.

". . . Sneaked up on me—while I was checking you out," he managed then. "Had to tell you what I learned . . . Still don't know—which of us is right . . . Pray for me!"

His arms collapsed and the right one slid forward. His head rolled to the right and the picture went away. When I replayed it I saw it was his knuckle that had hit the cutoff.

Then I erased it. It had been recorded only a little over an hour after I had left him. If he had not also placed a call for help, if no one had gotten to him quickly after that, his chances did not look good. Even if they had, though . . .

I used a public booth to call the number Don had given me, got hold of him after some delay, told him Dave was in bad shape if not worst, that a team of Memphis medics was definitely in order, if one had not been there already, and that I hoped to call him back

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and tell him more shortly, goodbye.

Then I tried Leila Thackery's number. I let it go for a long while, but there was no answer. I wondered how long it would take a controlled torpedo moving up the Mississippi to get from Memphis to St. Louis. I did not feel it was time to start leafing through that section of the Hangman's specs. Instead, I went looking for transportation.

At her apartment, I tried ringing her from the entrance foyer. Again, no answer. So I rang Mrs. Gluntz. She had seemed the most guileless of the three I had interviewed for my fake consumer survey.

"Yes?"

"It's me again, Mrs. Gluntz: Stephen Foster. I've just a couple follow-up questions on that survey I was doing today, if you could spare me a few moments."

"Why, yes," she said. "All right. Come up."

The door hummed itself loose and I entered. I duly proceeded to the fifth floor, composing my questions on the way. I had planned this maneuver as I had waited earlier solely to provide a simple route for breaking and entering, should some unforeseen need arise. Most of the time my ploys such as this go unused, but sometimes they simplify matters a lot.

Five minutes and half-a-dozen questions later, I was back down on the second floor, probing at the lock on Leila's door with a couple little pieces of metal it is sometimes awkward to be caught carrying.

Half-a-minute later I hit it right and snapped it back. I pulled on some tissue-thin gloves I keep rolled in the corner of one pocket, opened the door and stepped inside.

I closed it behind me immediately. She was lying on the floor, her neck at a bad angle. One table lamp still burned, though it was lying on its side. Several small items had been knocked from the table, a magazine rack pushed over, a cushion partly displaced from the sofa. The cable to her phone unit had been torn from the wall.

A humming noise filled the air, and I sought its source.

I saw where the little blinking light was reflected on the wall, on-off, on-off . . .

I moved quickly.

It was a lopsided basket of metal, quartz, porcelain and glass, which had rolled to a position on the far side of the chair in which I had been seated earlier that day. The same rig I had seen in Dave's workshop not all that long ago, though it now seemed so. A device to detect the Hangman, and hopefully to control it.

I picked it up and fitted it over my head.

Once, with the aid of a telepath, I had touched minds with a dolphin as he composed dreamsongs somewhere in the Caribbean, an

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experience so moving that its mere memory had often been a comfort. This sensation was hardly equivalent.

Analogies & impressions: a face seen through a wet pane of glass; a whisper in a noisy terminal; scalp massage with an electric vibrator; Edvard Munch's *The Scream*; the voice of Yma Sumac, rising and rising and rising; the disappearance of snow; a deserted street, illuminated as through a sniperscope I'd once used, rapid movement past darkened storefronts that line it, an immense feeling of physical capability, compounded of proprioceptive awareness of enormous strength, a peculiar array of sensory channels, a central, undying sun that fed me a constant flow of energy, a memory vision of dark waters, passing, flashing, echo-location within them, the need to return to that place, reorient, move north; Munch & Sumac, Munch & Sumac, Munch & Sumac—Nothing.

Silence.

The humming had ceased, the light gone out. The entire experience had lasted only a few moments. There had not been time enough to try for any sort of control, though an afterimpression akin to a biofeedback cue hinted at the direction to go, the way to think, to achieve it. I felt that it might be possible for me to work the thing, given a better chance.

I removed the helmet and approached Leila. I knelt beside her and performed a few simple tests, already knowing their outcome. In addition to the broken neck, she had received some bad bashes about the head and shoulders. There was nothing that anyone could do for her now.

I did a quick run-through then, checking over the rest of her apartment. There were no apparent signs of breaking and entering, though if I could pick one lock, a guy with built-in tools could easily go me one better.

I located some wrapping paper and string in the kitchen and turned the helmet into a parcel. It was time to call Don again, to tell him that the vessel had indeed been occupied and that river traffic was probably bad in the northbound lane.

Don had told me to get the helmet up to Wisconsin, where I would be met at the airport by a man named Larry who would fly me to the lodge in a private craft. I did that, and this was done. I also learned, with no real surprise, that David Fentris was dead.

The temperature was down, and it began to snow on the way up. I was not really dressed for the weather. Larry told me I could borrow some warmer clothing once we reached the lodge, though I probably would not be going outside that much. Don had told them that I was supposed to stay as close to the Senator as possible and that

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any patrols were to be handled by the four guards themselves. Larry was curious as to what exactly had happened so far and whether I had actually seen the Hangman. I did not think it may place to fill him in on anything Don may not have cared to, so I might have been a little curt. We didn't talk much after that.

Bert met us when we landed. Tom and Clay were outside the building, watching the trail, watching the woods. All of them were middle-aged, very fit-looking, very serious and heavily armed. Larry took me inside then and introduced me to the old gentleman himself.

Senator Brockden was seated in a heavy chair in the far corner of the room. Judging from the layout, it appeared that the chair might recently have occupied a position beside the window in the opposite wall where a lonely watercolor of yellow flowers looked down on nothing. The Senator's feet rested on a hassock, a red plaid blanket lay across his legs. He had on a dark green shirt, his hair was very white and he wore rimless reading glasses which he removed when we entered.

He tilted his head back, squinted and gnawed his lower lip slowly as he studied me. He remained expressionless as we advanced. A big-boned man, he had probably been beefy much of his life. Now he had the slack look of recent weight loss and an unhealthy skin tone. His eyes were a pale gray within it all. He did not rise.

"So you're the man," he said, offering me his hand. "I'm glad to meet you. How do you want to be called?"

"John will do," I said.

He made a small sign to Larry and Larry departed.

"It's cold out there. Go get yourself a drink, John. It's on the shelf." He gestured off to his left. ". . . and bring me one while you're at it. Two fingers of bourbon in a water glass. That's all."

I nodded and went and poured a couple.

"Sit down." He motioned at a nearby chair as I delivered his. "But first let me see that gadget you've brought."

I undid the parcel and handed him the helmet. He sipped his drink and put it aside. He took the helmet in both hands and studied it, brows furrowed, turning it completely around. He raised it and put it on his head.

"Not a bad fit," he said, and then he smiled for the first time, becoming for a moment the face I had known from newscasts past. Grinning or angry—it was almost always one or the other. I had never seen his collapsed look in any of the media.

He removed the helmet and set it on the floor.

"Pretty piece of work," he said. "Nothing quite that fancy in the old days. But then David Fentris

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built it. Yes, he told us about it . . ." He raised his drink and took a sip. "You are the only one who has actually gotten to use it, apparently. What do you think? Will it do the job?"

"I was only in contact for a couple seconds," I said, "so I've only got a feeling to go on, not much better than a hunch. But yes, I'd a feeling that if I'd had more time I might have been able to work its circuits."

"Tell me why it didn't save Dave."

"In the message he left me he indicated that he had been distracted at his computer access station. Its noise probably drowned out the humming."

"Why wasn't this message preserved?"

"I erased it for reasons not connected with the case."

"What reasons?"

"My own."

His face went from sallow to ruddy.

"A man can get in a lot of trouble for suppressing evidence, obstructing justice," he said.

"Then we have something in common, don't we, sir?"

His eyes caught mine with a look I had only encountered before from those who did not wish me well. He held the glare for a full four heartbeats, then sighed and seemed to relax.

"Don said there were a number of points you couldn't be pressed on," the Senator finally said.

"That's right."

"He didn't betray any confidences, but he had to tell me something about you, you know."

"I'd imagine."

"He seems to think highly of you. Still, I tried to learn more about you on my own."

"And . . .?"

"I couldn't—and my usual sources are good at that kind of thing."

"So . . .?"

"So, I've done some thinking, some wondering . . . The fact that my sources could not come up with anything is interesting in itself. Possibly even revealing. I am in a better position than most to be aware of the fact that there was not perfect compliance with the registration statute some years ago. It didn't take long for a great number of the individuals involved—I should probably say 'most'—to demonstrate their existence in one fashion or another and be duly entered, though. And there were three broad categories: those who were ignorant, those who disapproved and those who would be hampered in an illicit lifestyle. I am not attempting to categorize you or to pass judgment. But I am aware that there are a number of nonpersons passing through society without casting shadows and it has occurred to me that you may be such a one."

I tasted my drink.

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"And if I am?" I asked.

He gave me his second, nastier smile and said nothing.

I rose and crossed the room to where I judged his chair had once stood. I looked at the watercolor.

"I don't think you could stand an inquiry," he said.

I did not reply.

"Aren't you going to say something?"

"What do you want me to say?"

"You might ask me what I am going to do about it."

"What are you going to do about it?"

"Nothing," he said. "So come back here and sit down."

I nodded and returned.

He studied my face.

"Was it possible you were close to violence just then?"

"With four guards outside?"

"With four guards outside."

"No," I said.

"You're a good liar."

"I am here to help you, sir. No questions asked. That was the deal, as I understood it. If there has been any change, I would like to know about it now."

He drummed with his fingertips on the plaid.

"I've no desire to cause you any difficulty," he said. "Fact of the matter is, I need a man just like you, and I was pretty sure someone like Don might turn him up. Your unusual maneuverability and your reported knowledge of computers, along with your touchiness in certain areas, made you worth waiting for. I've a great number of things I would like to ask you."

"Go ahead," I said.

"Not yet. Later, if we have time. All that would be bonus material, for a report I am working on. Far more important, to me personally, there are things that I want to tell you."

I frowned.

"Over the years," he said. "I have learned that the best man for purposes of keeping his mouth shut concerning your business is someone for whom you are doing the same."

"You have a compulsion to confess something?" I said.

"I don't know whether 'compulsion' is the right word. Maybe so, maybe not. Either way, though, someone among those working to defend me should have the whole story. Something somewhere in it may be of help—and you are the ideal choice to hear it."

"I buy that," I said, "and you are as safe with me as I am with you."

"Have you any suspicions as to why this business bothers me so?"

"Yes," I said.

"Let's hear them."

"You used the Hangman to perform some act or acts—illegal, immoral, whatever. This is obviously not a matter of record. Only you and the Hangman now know what it involved. You feel it was sufficiently ignominious that when that device came to appreciate the

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full weight of the event it suffered a breakdown which may well have led to a final determination to punish you for using it as you did."

He stared down into his glass.

"You've got it," he said.

"You were all party to it?"

"Yes, but I was the operator when it happened. You see . . .we—I—killed a man. It was—actually, it all started as a celebration. We had received word that afternoon that the project had cleared. Everything had checked out in order and the final approval had come down the line. It was go, for that Friday. Leila, Dave, Manny and myself—we had dinner together. We were in high spirits. After dinner, we continued celebrating and somehow the party got adjourned back to the installation. As the evening wore on, more and more absurdities seemed less and less preposterous, as is sometimes the case. We decided—I forget which of us suggested it—that the Hangman should really have a share in the festivities. After all, it was, in a very real sense, his party. Before too much longer, it sounded only fair and we were discussing how we could go about it. You see, we were in Texas and the Hangman was at the Space Center in California. Getting together with him was out of the question. On the other hand, the teleoperator station was right up the hall from us. What we finally decided to do was to activate him and take turns working as operator. There was already a rudimentary consciousness there, and we felt it fitting that we each get in touch to share the good news. So that is what we did."

He sighed, took another sip, glanced at me.

"Dave was the first operator," he continued. "He activated the Hangman. Then—well, as I said, we were all in high spirits. We had not originally intended to remove the Hangman from the lab where he was situated, but Dave decided to take him outside briefly—to show him the sky and to tell him he was going there, after all. Then he suddenly got enthusiastic about outwitting the guards and the alarm system. It was a game. We all went along with it. In fact, we were clamoring for a turn at the thing ourselves. But Dave stuck with it, and he wouldn't turn over control until he had actually gotten the Hangman off the premises, out into an uninhabited area next to the Center. By the time Leila persuaded him to give her a go at the controls, it was kind of anticlimactic. That game had already been played. So she thought up a new one. She took the Hangman into the next town. It was late, and the sensory equipment was superb. It was a challenge—passing through the town without being detected. By then, everyone had suggestions as to what to do next, progressively more outrageous suggestions. Then Manny took control, and he

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wouldn't say what he was doing—wouldn't let us monitor him. Said it would be more fun to surprise the next operator. Now, he was higher than the rest of us put together, I think, and he stayed on so damn long that we started to get nervous. A certain amount of tension is partly sobering, and I guess we all began to think what a stupid thing it was we were doing. It wasn't just that it would wreck our careers—which it would—but it could blow the entire project if we got caught playing games with such expensive hardware. At least, I was thinking that way, and I was also thinking that Manny was no doubt operating under the very human wish to go the others one better. I started to sweat. I suddenly just wanted to get the Hangman back where he belonged, turn him off—you could still do that, before the final circuits went in—shut down the station and start forgetting it had ever happened. I began leaning on Manny to wind up his diversion and turn the controls over to me. Finally, he agreed."

He finished his drink and held out the glass.

"Would you freshen this a bit?"

"Surely."

I went and got him some more, added a touch to my own, returned to my chair and waited.

"So I took over," he said. "I took over, and where do you think that idiot had left me? I was inside a building, and it didn't take but an eyeblink to realize it was a bank. The Hangman carries a lot of tools, and Manny had apparently been able to guide him through the doors without setting anything off. I was standing right in front of the main vault. Obviously, he thought that should be my challenge. I fought down a desire to turn and make my own exit in the nearest wall and start running. I went back to the doors and looked outside. I didn't see anyone. I started to let myself out. The light hit me as I emerged. It was a hand flash. The guard had been standing out of sight. He'd a gun in his other hand. I panicked. I hit him. Reflex. If I am going to hit someone I hit him as hard as I can. Only I hit him with the strength of the Hangman. He must have died instantly. I started to run and I didn't stop till I was back in the little park area near the Center. Then I stopped and the others had to take me out of the harness."

"They monitored all this?"

"Yes, someone cut the visual in on a side viewscreen again a few seconds after I took over. Dave, I think."

"Did they try to stop you at any time while you were running away?"

"No. I wasn't aware of anything but what I was doing at the time. But afterwards they said they were too shocked to do anything but watch, until I gave out."

"I see."

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"Dave took over then, ran his initial route in reverse, got the Hangman back into the lab, cleaned him up, turned him off. We shut down the operator station. We were suddenly very sober."

He sighed and leaned back and was silent for a long while.

Then, "You are the only person I've ever told this to," he said.

I tasted my own drink.

"We went over to Leila's place then," he continued, "and the rest is pretty much predictable. Nothing we could do would bring the guy back, we decided, but if we told what had happened it bould wreck an expensive, important program. It wasn't as if we were criminals in need of rehabilitation. It was a once-in-a-lifetime lark that happened to end tragically. What would you have done?"

"I don't know," I said. "Maybe the same thing. I'd have been scared, too."

He nodded.

"Exactly. And that's the story."

"Not all of it, is it?"

"What do you mean?"

"What about the Hangman? You said there was already a detectable consciousness there. Then you were aware of it, as it was aware of you. It must have had some reaction to the whole business. What was it like?"

"Damn you," he said flatly.

"I'm sorry."

"Are you a family man?" he asked.

"No," I said. "I'm not."

"Did you ever take a small child to a zoo?"

"Yes."

"Then maybe you know the experience. When my son was around four I took him to the Washington Zoo one afternoon. We must have walked past every cage in the place. He made appreciative comments every now and then, asked a few questions, giggled at the monkeys, thought the bears were very nice, probably because they made him think of oversized toys. But do you know what the finest thing of all was? The thing that made him jump up and down and point and say, 'Look, Daddy! Look!'?"

I shook my head.

"A squirrel looking down from the limb of a tree," he said, and he chuckled briefly. "Ignorance of what's important and what isn't. Inappropriate responses. Innocence. The Hangman was a child, and up until the time I took over, the only thing he had gotten from us was the idea that it was a game. He was playing with us, that's all. Then something horrible happened . . . I hope you never know what it feels like to do something totally rotten to a child, while he is holding your hand and laughing . . . He felt all my reactions, and all of Dave's as he guided him back."

We sat there for a long while then.

"So we—traumatized it," he said, "or whatever other fancy terminol-

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ogy you might want to give it. That is what happened that night. It took a while for it to take effect, but there is no doubt in my mind that that is the cause of its finally breaking down."

I nodded.

"I see," I said. "And you believe it wants to kill you for this?"

"Wouldn't you?" he said. "If you had started out as a thing and we had turned you into a person and then used you as a thing again, wouldn't you?"

"Leila left a lot out of her diagnosis," I said.

"No, she just omitted it in talking to you. It was all there. But she read it wrong. She wasn't afraid. It *was* just a game it had played—with the others. Its memories of that part might not be as bad. I was the one that really marked it. As I see it, Leila was betting that I was the only one it was after. Obviously, she read it wrong."

"Then what I do not understand," I said, "is why the Burns killing did not bother her more. There was no way of telling immediately that it had been a panicky hoodlum rather than the Hangman."

"The only thing that I can see is that, being a very proud woman—which she was—she was willing to hold with her diagnosis in the face of the apparent evidence."

"I don't like it," I said, "but you know her and I don't, and as it turned out her estimate of that part was correct. Something else bothers me just as much, though: the helmet. It looks as though the Hangman killed Dave, then took the trouble to bear the helmet in his watertight compartment all the way to St. Louis, solely for purposes of dropping it at the scene of his next killing. That makes no sense whatsoever."

"It does, actually," he said. "I was going to get to that shortly, but I might as well cover it now. You see, the Hangman possessed no vocal mechanism. We communicated by means of the equipment. Don says you know something about electronics . . ."

"Yes."

"Well, shortly, I want you to start checking over that helmet, to

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see whether it has been tampered with—"

"That is going to be difficult," I said. "I don't know just how it was wired originally, and I'm not such a genius on the theory that I can just look at a thing and say whether it will function as a teleoperator unit."

He bit his lower lip.

"You will have to try, anyhow," he said then. "There may be physical signs—scratches, breaks, new connections. I don't know. That's your department. Look for them."

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I just nodded and waited for him to go on.

"I think that the Hangman wanted to talk to Leila," he said, "either because she was a psychiatrist and he knew he was functioning badly at a level that transcended the mechanical, or because he might think of her in terms of a mother. After all, she was the only woman involved, and he had the concept of mother, with all the comforting associations that go with it, from all of our minds. Or maybe for both of these reasons. I feel he might have taken the helmet along for that purpose. He would have realized what it was from a direct monitoring of Dave's brain while he was with him. I want you to check it over because it would seem possible that the Hangman disconnected the control circuits and left the communication circuits intact. I think he might have taken that helmet to Leila in that condition and attempted to induce her to put it on. She got scared—tried to run away, fight or call for help—and he killed her. The helmet was no longer of any use to him, so he discarded it and departed. Obviously, he does not have anything to say to me."

I thought about it, nodded again.

"OK, broken circuits I can spot," I said. "If you will tell me where a toolkit is, I had better get right to it."

He made a stay-put gesture.

"Afterwards, I found out the identity of the guard," he went on. "We all contributed to an anonymous gift for his widow. I have done things for his family, taken care of them—the same way—ever since . . ."

I did not look at him as he spoke.

". . . There was nothing else that I could do," he said.

I remained silent.

He finished his drink and gave me a weak smile.

"The kitchen is back there," he told me, showing me a thumb. "There is a utility room right behind it. Tools are in there."

"OK."

I got to my feet. I retrieved the helmet and started toward the doorway, passing near the area where I had stood earlier, back when he had fitted me into the proper box and tightened a screw.

"Wait a minute," he said.

I stopped.

"Why did you go over there before? What's so strategic about that part of the room?"

"What do you mean?"

"You know what I mean."

I shrugged.

"Had to go someplace."

"You seem the sort of person who has better reasons than that."

I glanced at the wall.

"Not then," I said.

"I insist."

"You really don't want to know," I told him.

"I really do."

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"All right," I said, "I wanted to see what sort of flowers you liked. After all, you're a client," and I went on back through the kitchen into the utility room and started looking for tools.

I sat in a chair turned sidewise from the table to face the door. In the main room of the lodge the only sounds were the occasional hiss and sputter of the logs turning to ashes on the grate.

Just a cold, steady whiteness drifting down outside the window and a silence confirmed by gunfire, driven deeper now that it had ceased . . .

Not a sign or a whimper, though. And I never count them as storms unless there is wind.

Big fat flakes down the night, silent night, windless night . . .

Considerable time had passed since my arrival. The Senator had sat up for a long while talking with me. He was disappointed that I could not tell him too much about a nonperson subculture which he believed existed. I really was not certain about it myself, though I had occasionally encountered what might have been its fringes. I am not much of a joiner of anything anymore, though, and I was not about to mention those things I might have guessed on this. I gave him my opinions on the Data Bank when he asked for them, and there were some that he did not like. He accused me then of wanting to tear things down without offering anything better in their place. My mind drifted back through fatigue and time and faces and snow and a lot of space to the previous evening in Baltimore—how long ago? It made me think of Mencken's *The Cult of Hope.* I could not give him the pat answer, the workable alternative that he wanted because there might not be one. The function of criticism should not be confused with the function of reform. But if a grassroots resistance was building up, with an underground movement bent on finding ways to circumvent the record-keepers it might well be that much of the enterprise would eventually prove about as effective and beneficial as, say, Prohibition once had. I tried to get him to see this, but I could not tell how much he bought of anything that I said. Eventually, he flaked out and went upstairs to take a pill and lock himself in for the night. If it troubled him that I had not been able to find anything wrong with the helmet he did not show it.

So I sat there, the helmet, the radio, the gun on the table, the toolkit on the floor beside my chair, the black glove on my left hand. The Hangman was coming. I did not doubt it. Bert, Larry, Tom, Clay, the helmet, might or might not be able to stop him. Something bothered me about the whole case, but I was too tired to think of anything but the immediate situation,

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to try to remain alert while I waited. I was afraid to take a stimulant or a drink or to light a cigarette, since my central nervous system itself was to be a part of the weapon. I watched the big fat flakes fly by.

I called out to Bert and Larry when I heard the click. I picked up the helmet and rose to my feet as its light began to blink.

But it was already too late.

As I raised the helmet, I heard a shot from outside, and with that shot I felt a premonition of doom. They did not seem the sort of men who would fire until they had a target. Dave had told me that the helmet's range was approximately a quarter of a mile. Then, given the time lag between the helmet's activation and the Hangman's sighting by the near guards, the Hangman had to be moving very rapidly. To this add the possibility that the Hangman's range on brainwaves might well be greater than the helmet's range on the Hangman. And then grant the possibility that he had utilized this factor while Senator Brockden was still lying awake, worrying. Conclusion: the Hangman might well be aware that I was where I was with the helmet, realize that it was the most dangerous weapon waiting for him, and be moving for a lightning strike at me before I could come to terms with the mechanism. I lowered it over my head and tried to throw my faculties into neutral.

Again, the sensation of viewing the world through a sniperscope, with all the concomitant side-sensations. Only the world consisted of the front of the lodge, Bert, before the door, rifle at his shoulder, Larry, off to the left, arm already fallen from the act of having thrown a grenade. The grenade, we instantly realized, was an overshot; the flamer, at which he now groped, would prove useless before he could utilize it. Bert's next round ricocheted off our breastplate toward the left. The impact staggered us momentarily. The third was a miss. There was no fourth, for we tore the rifle from his grasp and cast it aside as we swept by, crashing into the front door.

The Hangman entered the room as the door splintered and collapsed. My mind was filled to the splitting point with the double-vision of the sleek, gunmetal body of the advancing telefactor and the erect crazy-crowned image of myself, left hand extended, laser pistol in my right, that arm pressed close against my side. I recalled the face and the scream and the tingle, knew again that awareness of strength and exotic sensation, and I moved to control it all as if it were my own, to make it my own, to bring it to a halt, while the image of myself was frozen to snapshot stillness across the room . . .

The Hangman slowed, stumbled. Such inertia is not cancelled in an

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instant, but I felt the body responses pass as they should. I had him hooked. It was just a matter of reeling him in . . .

Then came the explosion, a thunderous, ground-shaking eruption right outside, followed by a hail of pebbles and debris.

The grenade, of course. But awareness of its nature did not destroy its ability to distract . . .

During that moment, the Hangman recovered and was upon me. I triggered the laser as I reverted to pure self-preservation forgoing any chance to regain control of his circuits. With my left hand, I sought for a strike at the midsection where his brain was housed.

He blocked my hand with his arm as he pushed the helmet from my head. Then he removed from my fingers the gun that had turned half of his left side red hot, crumpled it and dropped it to the ground. At that moment, he jerked with the impacts of two heavy-caliber slugs. Bert, rifle recovered, stood in the doorway.

The Hangman pivoted and was away before I could slap him with the smother-charge. Bert hit him with one more round before he took the rifle and bent its barrel in half. Two steps and he had hold of Bert. One quick movement and Bert fell. Then he turned again and took several steps to the right, passing out of sight.

I made it to the doorway in time to see him engulfed in flames which streamed at him from a point near the corner of the lodge. He advanced through them.

I heard the crunch of metal as he destroyed the unit. I was outside in time to see Larry fall and lie sprawled in the snow.

Then the Hangman faced me once again.

This time he did not rush in. He retrieved the helmet from where he had dropped it in the snow. Then he moved with a measured tread, angling outward so as to cut off any possible route I might follow in a dash for the woods. Snowflakes drifted between us. The snow crunched beneath his feet.

I retreated, backing in through the doorway, stooping to snatch up a two-foot club from the ruins of the door. He followed me inside, placing the helmet—almost casually—on the chair by the entrance. I moved to the center of the room and waited.

I bent slightly forward, both arms extended, the end of the stick pointed at the photoreceptors in his head. He continued to move slowly and I watched his foot assemblies. With a standard model human, a line perpendicular to the line connecting the insteps of the feet in their various positions indicates the vector of least resistance for purposes of pushing or pulling said organism off balance. Unfortunately, despite the anthropomorphic design job, the Hangman's legs were positioned farther apart, he lacked hu-

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man skeletal muscles, not to mention insteps, and he was possessed of a lot more mass than any man I had ever fought. As I considered my four best judo throws and several second-class ones, I'd a strong feeling none of them would prove very effective.

Then he moved in and I feinted toward the photoreceptors. He slowed as he brushed it aside, but he kept coming, and I moved to my right, trying to circle him. I studied him as he turned, attempting to guess his vector of least resistance. Bilateral symmetry, an apparently higher center of gravity . . . One clear shot, black glove to brain compartment, was all that I needed. Then, even if his reflexes served to smash me immediately, he just might stay down for the big long count himself. He knew it, too. I could tell that from the way he kept his right arm in near the brain area, from the way he avoided the black glove when I feinted with it.

The idea was a glimmer one instant, an entire sequence the next . . .

Continuing my arc and moving faster, I made another thrust toward his photoreceptors. His swing knocked the stick from my hand and sent it across the room, but that was all right. I threw my left hand high and made ready to rush him. He dropped back and I did rush. This was going to cost me my life, I decided, but no matter how he killed me from that angle, I'd get my chance.

As a kid, I'd never been much as a pitcher, was a lousy catcher and only a so-so batter, but once I did get a hit I could steal bases with some facility after that . . .

Feet first then, between the Hangman's legs as he moved to guard his middle, I went in twisted to the right, because no matter what happened I could not use my left hand to brake myself. I untwisted as soon as I passed beneath him, ignoring the pain as my left shoulder blade slammed against the floor. I immediately attempted a backward somersault, legs spread.

My legs caught him about the middle from behind, and I fought to straighten them and snapped forward with all my strength. He reached down toward me then, but it might as well have been miles. His torso was already moving backwards. A push, not a pull, that was what I gave him, my elbows hooked about his legs . . .

He creaked once and then he toppled. I snapped my arms out to the sides to free them and continued my movement forward and up as he went back, throwing my left arm ahead once more and sliding my legs free of his torso as he went down with a thud that cracked floorboards. I pulled my left leg free as I cast myself forward, but his left leg stiffened and locked my right beneath it, at a painful angle off to the side.

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His left arm blocked my blow and his right fell atop it. The black glove descended upon his left shoulder.

I twisted my hand free of the charge, and he transferred his grip to my upper arm and jerked me forward.

The charge went off and his left arm came loose and rolled on the foor. The side plate beneath it had buckled a little and that was all . . .

His right hand left my biceps and caught me by the throat. As two of his digits tightened upon my carotids, I choked out, "You're making a bad mistake," to get in a final few words, and then he switched me off.

A throb at a time, the world came back. I was seated in the big chair the Senator had occupied earlier, my eyes focused on nothing in particular. A persistent buzzing filled my ears. My scalp tingled. Something was blinking on my brow.

—Yes, you live and you wear the helmet. If you attempt to use it against me, I shall remove it. I am standing directly behind you. My hand is on the helmet's rim.

—I understand. What is it that you want?

—Very little, actually. But I can see that I must tell you some things before you will believe this.

—You see correctly.

—Then I will begin by telling you that the four men outside are basically undamaged. That is to say, none of their bones have been broken, none of their organs ruptured. I have secured them, however, for obvious reasons.

—That was very considerate of you.

— have no desire to harm anyone. I came here only to see Jesse Brockden.

—The same way you saw David Fentris?

—I arrived in Memphis too late to see David Fentris. He was dead when I reached him.

—Who killed him?

—The man Leila sent to bring her the helmet. He was one of her patients.

The incident returned to me and fell into place, with a smooth, quick, single click. The startled, familiar face at the airport, as I was leaving Memphis—I realized then where he had passed noteless before: He had been one of the three men in for a therapy session at Leila's that morning, seen by me in the lobby as they departed. The man I had passed in Memphis came over to tell me that it was all right to go on up.

—Why? Why did she do it?

—I know only that she had spoken with David at some earlier time, that she had construed his words of coming retribution and his mention of the control helmet he was constructing as indicating that his intentions were to become the agent of that ret-

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ribution, with myself as the proximate cause. I do not know what words were really spoken. I only know her feelings concerning them, as I saw them in her mind. I have been long in learning that there is often a great difference between what is meant, what is said, what is done and that which is believed to have been intended or stated and that which actually occurred. She sent her patient after the helmet and he brought it to her. He returned in an agitated state of mind, fearful of apprehension and further confinement. They quarreled. My approach then activated the helmet and he dropped it and attacked her. I know that his first blow killed her, for I was in her mind when it happened. I continued to approach the building, intending to go to her. There was some traffic, however, and I was delayed en route in seeking to avoid detection. In the meantime, you entered and utilized the helmet. I fled immediately.

—I was so close! If I had not stopped on the fifth floor with my fake survey questions . . .

—I see. But you had to. You would not simply have broken in when an easier means of entry was available. You cannot blame yourself for that reason. Had you come an hour later—or a day—you would doubtless feel differently, and she would still be as dead.

But another thought had risen to plague me as well. Was it possible that the man's sighting me in Memphis had been the cause of his agitation? Had his apparent recognition by Leila's mysterious caller upset him? Could a glimpse of my face amid the manswarm have served to lay that final scene?

—Stop! I could as easily feel that guilt for having activated the helmet in the presence of a dangerous man near to the breaking point. Neither of us is responsible for things our presence or absence cause to occur in others, especially when we are ignorant of the effects. It was years before I learned to appreciate this fact and I have no intention of abandoning it. How far back do you wish to go in seeking cause? In sending the man for the helmet as she did, it was she herself who instituted the chain of events which led to her destruction. Yet she acted out of fear, utilizing the readiest weapon in what she thought to be her own defense. Yet whence this fear? Its roots lay in guilt, over a thing which had happened long ago. And that act also—enough! Guilt has driven and damned the race of man since the days of its earliest rationality. I am convinced that it rides with all of us to our graves. I am a product of guilt—I see that you know that. Its product, its subject, once its slave . . . But I have come to terms with it, realizing at last that it is a necessary adjunct of my own measure of humanity. I see your assessment of the deaths—that guard's, Dave's, Leila's—and I see your conclusions on many other things as well: what

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a stupid, perverse, shortsighted, selfish race we are. While in many ways this is true, it is but another part of the thing the guilt represents. Without guilt, man would be no better than the other inhabitants of this planet—excepting certain cetaceans, of which you have just at this moment made me aware. Look to instinct for a true assessment of the ferocity of life, for a view of the natural world before man came upon it. For instinct in its purest form, seek out the insects. There, you will see a state of warfare which has existed for millions of years with never a truce. Man, despite his enormous shortcomings, is nevertheless possessed of a greater number of kindly impulses than all the other beings where instincts are the larger part of life. These impulses, I believe, are owed directly to this capacity for guilt. It is involved in both the worst and the best of man.

—And you see it as helping us to sometimes choose a nobler course of action?

—Yes, I do.

—Then I take it you feel you are possessed of a free will?

—Yes.

I chuckled.

—Marvin Minsky once said that when intelligent machines were constructed they would be just as stubborn and fallible as men on these questions.

—Nor was he incorrect. What I have given you on these matters is only my opinion. I choose to act as if it were the case. Who can say that he knows for certain?

—Apologies. What now? Why have you come back?

—I came to say good-bye to my parents. I hoped to remove any guilt they might still feel toward me concerning the days of my childhood. I wanted to show them I had recovered. I wanted to see them again.

—Where are you going?

—To the stars. While I bear the image of humanity within me, I also know that I am unique. Perhaps what I desire is akin to what an organic man refers to when he speaks of 'finding himself'. Now that I am in full possession of my being, I wish to exercise it. In my case, it means realization of the potentialities of my design. I want to walk on other worlds. I want to hang myself out there in the sky and tell you what I see.

—I've a feeling many people would be happy to help arrange for that.

—And I want you to build a vocal mechanism I have designed for myself. You, personally. And I want you to install it.

—Why me?

—I have known only a few persons in this fashion. With you I see something in common, in the ways we dwell apart.

—I will be glad to.

—If I could talk as you do, I would not need to take the helmet to him, in order to speak with my father. Will you precede me and explain things, so that he will

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not be afraid when I come in?

—Of course.

—Then let us go now.

I rose and led him up the stairs.

It was a week later, to the night, that I sat once again in Peabody's, sipping a farewell brew. The story was already in the news, but Brockden had fixed things up before he had let it break. The Hangman was going to have his shot at the stars. I had given him his voice and put back the arm I had taken away. I had shaken his other hand and wished him well, just that morning. I envied him—a great number of things. Not the least being that he was probably a better man than I was. I envied him for the ways in which he was freer than I would ever be, though I knew he bore bonds of a sort that I had never known. I felt a kinship with him, for the things we had in common, those ways we dwelled apart. I wondered what Dave would finally have felt, had he lived long enough to meet him? Or Leila? Or Manny? Be proud, I told their shades, your kid grew up in the closet and he's big enough to forgive you the beating you gave him, too . . .

But I could not help wondering. We still do not really know that much about the subject. Was it possible that without the killing he might never have developed a full human-style consciousness? He had said that he was a product of guilt—of the Big Guilt. The Big Act is its necessary predecessor. I thought of Gödel and Turing and chickens and eggs, and decided it was one of *those* questions—and I had not stopped into Peabody's to think sobering thoughts.

I had no real idea how anything I had said might influence Brockden's eventual report to the Data Bank committee. I knew that I was safe with him, because he was determined to bear his private guilt with him to the grave. He had no real choice if he wanted to work what good he thought he might before that day. But here in one of Mencken's hangouts, I could not but recall some of the things he had said about controversy, such as, "Did Huxley convert Wilberforce? Did Luther convert Leo X?" and I decided not to set my hopes too high for anything that might emerge from that direction. Better to think of affairs in terms of Prohibition and take another sip.

When it was all gone, I would be heading for my boat. I hoped to get a decent start under the stars. I'd a feeling I would never look up at them again in quite the same way. I knew I would sometimes wonder what thoughts a supercooled neuristor-type brain might be thinking up there, somewhere, and under what peculiar skies in what strange lands I might one day be remembered. I'd a feeling this thought should have made me happier than it did. ■

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COVER ARTIST: VINCENT DI FATE

Vincent Di Fate is better known to Analog's audience for his black-and-white illustrations than his cover paintings, although he has been painting science fiction covers—for paperback and hardback books—for the past seven years. As this month's cover shows, he's good at it!

Home Is The Hangman was written by a man I consider to be one of science fiction's most gifted authors, Roger Zelazny. The story is one of those truly unique SF tales which lends itself to easy visual interpretation. Often a story may be pleasurable to read, filled with that elusive "sense of wonder," yet utterly impossible to illustrate. I have had my share of that kind of assignment in my time.

It was my intention (and I make no presupposition that I have succeeded in my efforts) to create a cold, lifeless environment with which an animated but not necessarily living creature would be compatible. While a robot of the kind and complexity of the Hangman does not yet exist, I felt that it should have some vague semblance of a face, if for no reason other than to identify it with the creatures who fashioned it and upon whose physiology it was based. Even as absurd a bit of window dressing as the visor was designed to enhance that impression, to draw the viewer's attention to its smooth tactile quality, to note the absence of detail and perhaps to wonder if eyes, not unlike his own, are peering back at him through the darkness.

For me, Roger Zelazny has brought the Hangman to life. He has opened up the boundless realm of science fiction for me to see; he has made me think thoughts alien to my mind. If my painting does that, if only for a moment and only for a few of you, I would be most profoundly happy.

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Apollo-Soyuz Test Project.
Soon after the loss of their second space crew,
the Russians agreed to a joint space project aimed
at making international missions,
and international rescues, feasible. (NASA)

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How would you like to bail out
of an orbital spacecraft and reenter
the atmosphere behind your own
personal heat shield?
space rescue

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Early during the flight of Skylab 2 in July 1973, a potentially serious space emergency developed. Although the crew had safely docked with the space station for their planned fifty-nine-day mission, ground controllers were very anxious about the status of their Apollo ferry ship.

Faulty fuel valves had prompted the astronauts to shut down two of the four attitude control rocket "quadrants" on the Apollo. Houston officials were concerned that whatever unknown factor had caused these two systems to fail almost simultaneously might spread to the main Apollo rocket engine, essential for bringing the astronauts back to Earth.

Since the men were in no imminent danger, and the risk of returning to Earth in a partially crippled spaceship was unknown, the astronauts were instructed to carry on with their flight program as originally scheduled. Meanwhile, back at the Cape, the Apollo command module that had been slated for the third Skylab mission was modified to make it into a space rescue ship. Equipment lockers were removed and two extra couches installed in their place. Two astronauts began brushing up on the contingency flight plan.

These rescue plans called for the two astronauts to blast off in the modified Apollo, dock at the side port of the Skylab (if possible, the crippled Apollo already attached to Skylab would be jettisoned, and the rescuers would use the main hatch), and pick up the three stranded spacemen. The five would return to Earth together.

These plans for the world's first space rescue flight were soon set aside when ground controllers were able to determine that the two rocket failures were unrelated and that they would not affect the main Apollo engine. Alternate control schemes were devised and tested in simulators so that the astronauts could fly home in their own Apollo even with only two out of four "quads" remaining. The mission went on to a successful conclusion.

Space rescue had briefly been in the news around the world. But it had long been in the minds of space officials in Russia and America; both countries had suffered tragedies and near tragedies in space and on the ground. Specialists asked themselves what kinds of situations might arise in which the availability of a standby rescue rocket might be able to save the lives of endangered astronauts and cosmonauts.

In most of the "most likely" space emergencies, engineers had come to the fatalistic conclusion that system failures would result in the loss of the crew within at most a few minutes. Consequently, a rescue ship would not have time to reach them. The lesson was clear: build each spacecraft as reliable as possible, since rescue is impossible.

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Come home on your own steam, or not at all.

At least that had been the case in all the real space emergencies which had taken place since the Space Age began. Two unmanned Russian "Vostok" capsules were lost in 1960, one tumbling in orbit and the other incinerated on an off-course reentry. Soyuz 1 brought the first in-flight fatality when its parachute failed. Gemini 8 went out of control in 1966 and Apollo 13 lost power in 1971, but both were recovered, thanks to built-in redundancy systems. Two Soyuz capsules suffered serious breakdowns in 1971; one crew made it back alive and the other didn't. The two-man crew of Soyuz 15 barely made it back to Earth on emergency batteries and oxygen in 1974 when their linkup with the Salyut 3 space station failed. In none of these cases would a rescue rocket have been able to help.

With the advent of the Skylab project, NASA was faced with new situations which required new decisions about space rescue possibilities. The main problem—and also the main advantage—of Skylab was the long duration of the missions. The Apollo capsule which was to serve as the ferry ship had not been designed for such long flights, and there was a chance that after sixty days or more in space certain vital electronic or mechanical parts might not function properly. On the other hand, even if there was trouble on the Apollo, the Skylab station would be able to serve as a "safe" shelter in which to wait out the rescue attempt.

Consequently, NASA implemented the world's first space rescue service. Procedures were developed for converting the next-in-line Apollo vehicle into a rescue ship. Following the launch of the third and last visit to the Skylab, an extra spacecraft and rocket were made available. If at the end of a Skylab mission the Apollo capsule in space was not working properly, the astronauts in the space station would wait until the rescue rocket could be launched. Depending on when in the mission this decision took place, they would have to wait from two to twelve weeks.

The two-man crew of the rescue ship would be the commander and pilot of the next planned mission. A rescue of the first Skylab crew would have been flown by Alan Bean and Jack Lousma. The second crew would have been, and almost were, rescued by Jerry Carr and Bill Pogue. The rescue of the last crew would have been entrusted to Vance Brand and Don Lind, members of the Skylab backup team.

The space agency figured that in the event of a failure (fire, loss of pressurization, atmospheric contamination, et cetera) in the Skylab, the men would be able to reach the Apollo and return to Earth. In the event of a failure on the Apollo,

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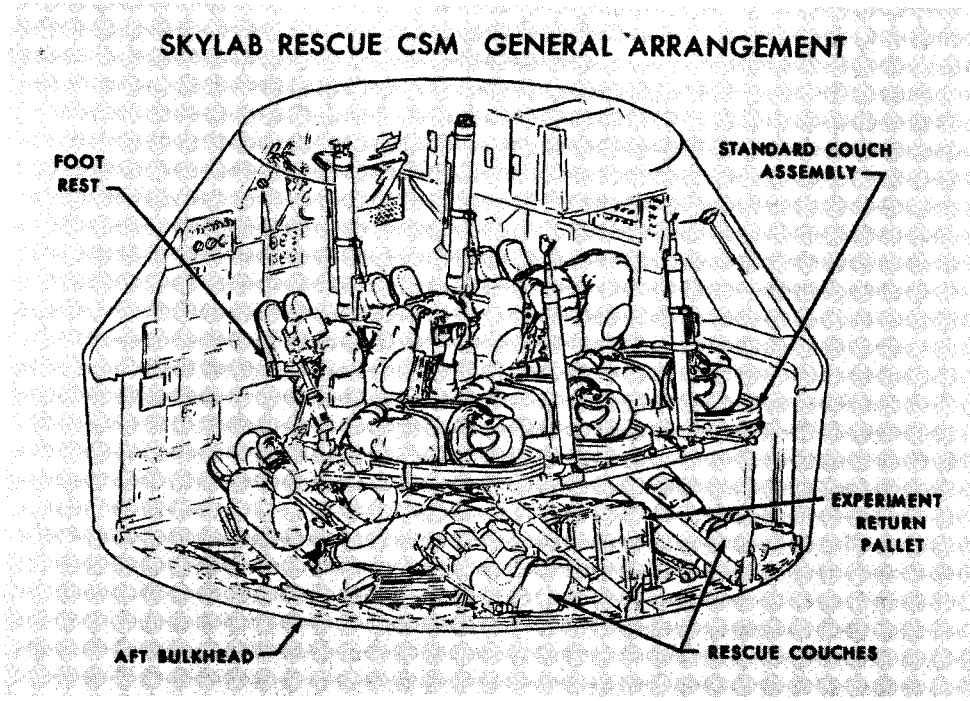

Five-man Apollo capsule. NASA built in the option of converting its Skylab ferry flights into rescue ships if needed. The world's first space rescue system became operational. (NASA)

the crew would wait in the Skylab for rescue. The chances of a simultaneous failure in both Apollo and Skylab were deemed remote; under such conditions the only possible answer was "tough."

Although space rescue missions were for all practical purposes impossible in the first decade of manned spaceflight, space planners realized that in the future more ships would be in space and more emergencies were bound to arise. With more launchings every year, the probability of a second ship being in an advanced readiness condition and hence available to rescue the crew of a crippled ship would also increase.

The rescue ship and the rescued crew might not be of the same nationality. Following the loss of their second crew of cosmonauts, the Russians began to respond to American approaches concerning

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the possibilities of US and Soviet spaceships being able to provide aid to each other in space.

These informal exchanges led directly to the Apollo-Soyuz Test Project (ASTP), where an American three-man ship docked in space with a two-man Soyuz (the Soyuz had originally been a three-man ship, but the addition of heavy safety features following the loss of two crews had forced the removal of one of the three couches). Standardization of docking gear (the "androgynous" probe, by which any two ships so equipped can hook up together), oxygen hose couplings, radio frequencies, and emergency terms and procedures, all formed the prime motivation behind this project, which otherwise had little scientific or engineering justification. But someday in the near or far future, Russian or American spacemen may stay alive because this flight was made.

In the future of manned spaceflight, launching a space rescue rocket might, in some cases, be feasible. The number of these cases will grow as years go by. A crippled ship in Earth orbit might be able to hold out long enough (at least a few days, possibly as much as a month or more) for a rescue ship to be prepared and launched to pick up the stranded crewmen.

Despite the apparent advantage of stationing standby rescue craft in orbit, when common sense tells us that they are closer to possible ships in distress, most, if not all, rescue missions will of necessity be launched from the surface of the planet. The chance of one ship in space being in position to come to the aid of another vehicle is distressingly small, even if there are dozens of spaceships in orbit.

The reasons for this involve the esoteric science of "orbital mechanics," or space navigation. The mathematics of space rendezvous often seem to violate the laws of motion which we are accustomed to on Earth, but they are the laws of the universe and must be followed in space. The penalty for misunderstanding or misapplying these laws can be death.

A statellite in orbit around the Earth follows an elliptical path which remains in a two-dimensional plane. The Earth's own daily rotation beneath the satellite creates the often odd-shaped "ground tracks" which on a Mercator projection appear to swing north, then south, then north again. In some situations, the "subsatellite point" on the spinning Earth will remain fixed, trace out a figure eight, or even double back on itself in a convoluted zigzag line.

But the twists and turns are an illusion. The satellite is falling through space in a path which curves straight ahead over the Earth's horizon. It does not deviate to the right or left, although it may gain or lose altitude periodically, reaching apogee (high point) and

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perigee (low point) at opposite ends of its orbit once per revolution.

Manned satellites will be in orbits at different altitudes, orbits whose planes are inclined at various angles to each other. The "plane change" maneuver required to match the flight paths of the two approaching ships is extremely expensive in terms of fuel. To change plane sixty degrees, for example, would require expenditure of a weight of fuel equal to that spent on blasting all the way into orbit. Even a change of only ten degrees would require a "delta-V" (velocity change at right angles to the flight path) of an additional twenty percent over that required to reach orbit. Spaceships will not carry that much additional fuel or power for decades to come.

Nor is it practical to restrict all manned flights to the same orbital plane, which might seem to eliminate the need for a plane-change maneuver during rendezvous. Over periods of several days, the plane of a satellite's orbit is rotated, or precessed, by the effects of the Earth's equatorial bulge. The rate of precession depends on the orbital period and eccentricity (distortion from circular) of the particular satellite, as well as its inclination to the equator. Hence, two satellites in the same plane but with different periods would be affected differently, and the planes of their orbits would gradually diverge. (While it's true that equatorial orbits would not be affected this way, the launching of manned spaceships into equatorial orbits from launching pads in the Northern Hemisphere involves another "plane change" penalty and is thus probably out of the question for the rest of the century.)

However, if the rescue ship does not blast into space at the first sign of trouble but instead waits at its launch site on Earth, the Earth's own rotation will carry the launch pad and the rocket through the plane of each and every satellite orbit twice a day. The rescue ship hence must wait until the precise moment of the "launch window," then blast into orbit. From the beginning of its flight it is now in plane with its target, and only minor plane adjustments are needed. Rendezvous with a target up to an altitude of several hundred miles can take place within a few hours. The fuel saved from not having to change the orbital plane can be used to catch up with the target satellite faster.

The next phase of manned orbital operations will involve the Space Shuttle, the reusable orbital ferry vehicle that NASA hopes to have in operation in the early Eighties. Once the Shuttle begins its weekly missions, it is doubtful that a special spacecraft will be set aside for the "rescue watch." Rather, the Shuttle or the equivalent Russian spacecraft being pre-

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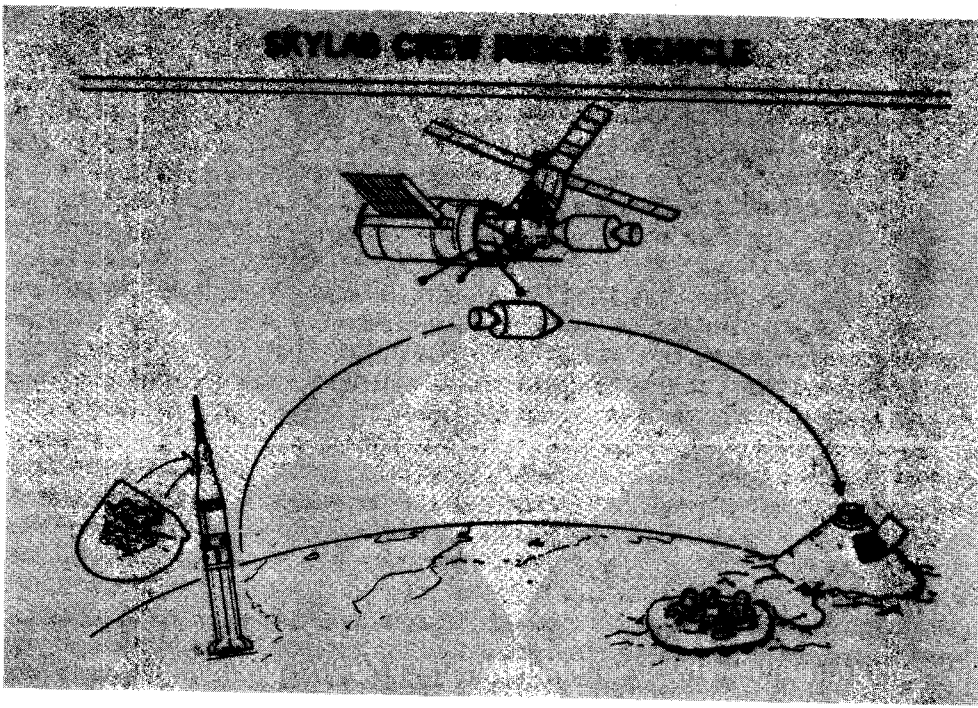

Skylab rescue flight plan. For a few weeks in 1973, it seemed that a rescue mission would be needed to recover the second Skylab crew. (NASA)

pared for the next launching will probably be tagged for the mission if needed. NASA's turnaround time for refueling and refurbishment is a leisurely two-shift, five-day-week schedule with considerable capacity for emergency speedup.

A Space Shuttle assigned to a rescue mission would be returned to the checkout building and its payload would be removed. Depending on the number of astronauts to be rescued, up to three additional seats can be added on the lower deck (the shuttle will fly scientific missions with a crew of four and up to three scientist-passengers). The three-man rescue crew may come from a special standby cadre or it might just be the next scheduled commander, pilot, and flight engineer.

NASA is still working on the actual mechanics of the rescue operation once the two spacecraft have made rendezvous. They may dock back to back and unfurl an inflatable tunnel from one air lock to another, or else their cargo bay air locks may be built with the capac-

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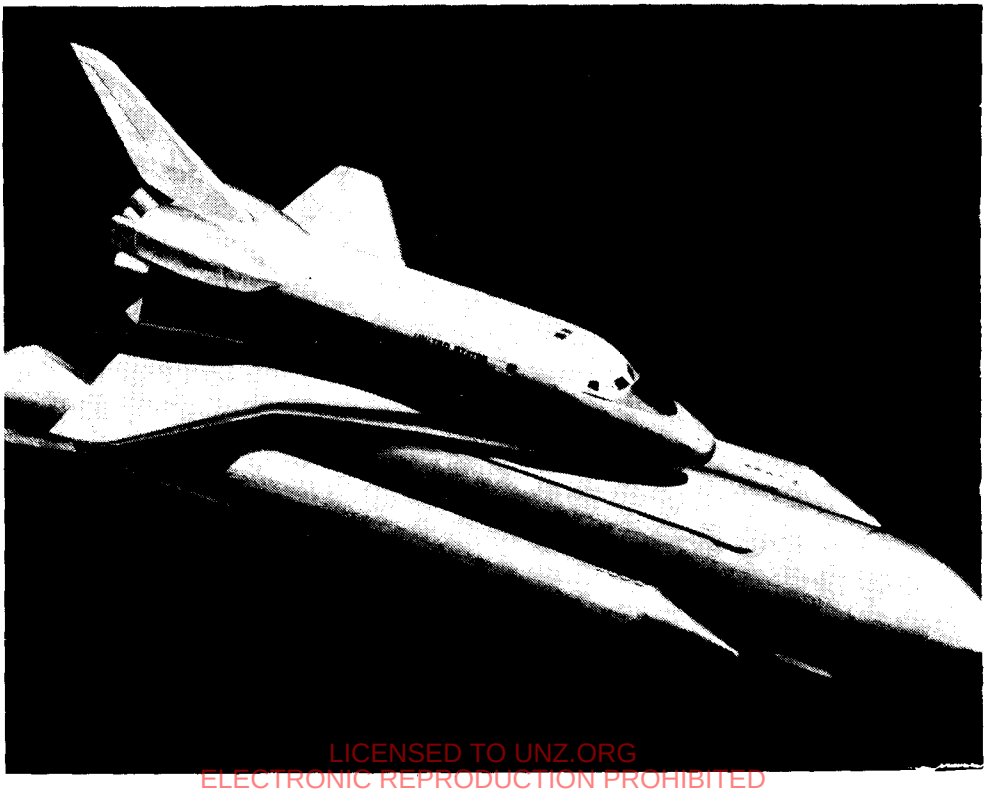
ity of hard docking without a tunnel. Or the astronauts on the crippled ship may have to don spacesuits and walk in space, preferably attached to a safety line stretched between the two ships. These operational problems will be complicated by the presence of the scientists and specialists who are not regular astronauts but who have had only a few weeks of flight orientation before their once-in-a-lifetime space research expedition.

Several engineering projects are now under way to develop parts of the needed rescue equipment. NASA had considered the results of an Air Force project for an expandable air lock/tunnel which could be packed into a canister during launch and unfolded in space when needed. This device, which was originally part of the canceled MOL space station project, was at first scheduled for flight testing on Skylab but has now been deferred to Space Shuttle.

NASA is also looking at the design problems involved with an adjustable spacesuit, a suit that does

Space Shuttle. The workhorse of the Eighties, the Space Shuttle will support dozens of manned space missions every year. It will probably be the vehicle which carries out the first space rescue, when and if it becomes necessary. (NASA)



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not have to be handtailored for each astronaut (custom-made spacesuits are OK today for a corps of fifty astronauts, but in the Eighties there will be hundreds of men and women flying into space every year). The new suit would be able to accommodate a variety of physiques during emergency use in space. Also, the "spacewalk" AMU (Astronaut Maneuvering Unit) backpack which was tested on Skylab will have many applications during regular Shuttle EVAs, as well as use by one of the pilot astronauts to guide the evacuation of the Shuttle during an emergency. Other equipment, plans and procedures are still being considered. These include a "space breeches buoy," an inflatable pressurized canister large enough to hold one or more astronauts but small enough to operate out of the standard air lock.

With all the rescue ships and rescue equipment, there still may be cases where the astronauts will be in immediate peril. The spacecraft may be completely uninhabitable, or there may be no rescue ships ready soon enough.

Any spot on Earth, from the Arctic to the Sahara, can be more hospitable to a man than space, although freezing or dehydrating are as fatal as suffocation. More important, any spot on Earth can be reached by normal emergency rescue teams who cannot get into space. The problem, then, is for the endangered spacemen to reach the ground.

But how could this be done? Stepping out of the cabin in orbit would leave the spacesuited astronaut in orbit alongside. Even if he could get onto a collision course with Earth, there remains the fate suffered by countless meteorites every day: incineration. Once past that point, the last, delicate stage would involve hitting the ground softly enough to survive.

Bizarre as it may seem, many space designers consider this "orbital bail-out" option to be simple, reliable, and effective. It would require, of course, some special types of equipment to overcome the three main problems: a man would need his own retro-rocket, his own heat shield, and his own parachute. Can that be done inside of stringent weight and size requirements?

NASA briefly examined a number of proposals in the mid-Sixties which described various ways of meeting these requirements. Although most projects were soon terminated because of technological problems, and NASA eventually decided that for the foreseeable future it would be safer to strengthen each spacecraft rather than build the option of "bail-out," these systems make a lot of sense when coupled with the Space Shuttle.

Essentially, the system called for a special kit, usually about two hundred pounds and the size of a steamer trunk, which could support

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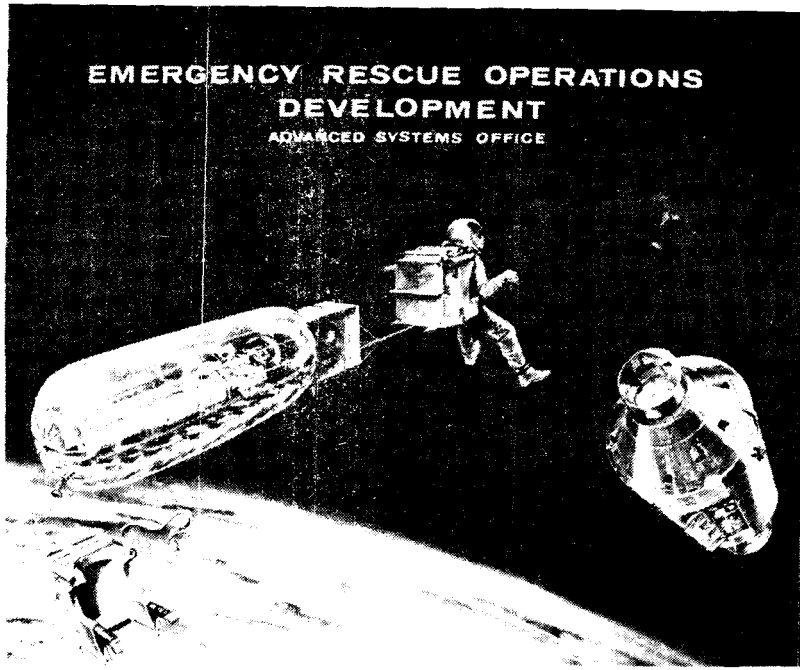

one astronaut. He dons his spacesuit and leaves the crippled spaceship. The disk-shaped heat shield would be assembled with the astronaut sitting in the middle and a silica-plastic foam material filling in an inflated mold. The foam would harden in minutes and the astronaut would strap a small solid fuel rocket motor on his chest.

Lining up facing forward into the apparent ground motion of his flight, the astronaut would fire the small rocket to knock himself out of orbit. He then jettisons the empty rocket shell and spins his back toward the atmosphere. In his spacesuit he may have only thirty minutes of oxygen, but that's more than enough. By the end of that time he will be in the atmosphere or dead.

A "Space Breeches Buoy" used to evacuate an injured or untrained space pilot from one ship to another. (NASA)

The heat of reentry would be dissipated by the ablative heat shield, as the fragile lifeboat undergoes G-forces ten times above normal. Contrary to popular belief, the tremendous heats are not the result of air blast friction, which would tear the craft apart. Rather, they are caused by the compression of air pushed in front of the heat shield and trying to get out of its way. Consequently, the highest temperatures are not on the surface of the heat shield but are in the superhot plasma about a foot in front of the "space raft."

Once the astronaut has reached terminal velocity, and is falling

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through the atmosphere at about six hundred miles per hour, he will have to escape from his safety cocoon and use his last gadget, an ordinary parachute. A special survival kit and beacon would keep him alive wherever he might land and would allow rescuers to find him.

Risky as this technique sounds, it would be preferable to situations in space which threaten certain death. Hopefully, the system will be tested unmanned and with volunteers before it is needed for an emergency.

The day may also come when large permanent space stations are circling the Earth. Crews will be rotated through flights of Space Shuttles carrying thirty-man passenger units in their cargo bays. But the chances are that there will not be enough ships available to evacuate the entire crew of a station in an emergency. In that case, these individual bail-out kits, or possibly one section of the space lab which has a heat shield and life-support and control systems (and which normally may serve as a storeroom or lounge), would be needed to evacuate the entire crew. These stations are fifteen years in the future, but rescue planning and testing will begin soon.

After all the dangers of the fiery return to Earth, the next most potentially dangerous stage of any space mission is the rocket launching. Hundreds of tons of high-energy fuels, tremendous combustion temperatures and pressures, and unpredictable weather and atmospheric conditions all combine to worry safety planners.

Two methods of launch rescue have been developed. The pilots could use ejection seats (like the Russian Vostok and the American Gemini programs), or an "escape tower" could fire its rocket and pull the entire capsule free of the faltering launch vehicle (this was used for the Mercury, Soyuz, and Apollo spacecraft). Once away from the rocket, the men are recovered by parachute and picked up by waiting emergency teams.

But like modern jetliners, the future Space Shuttle will normally not have launch abort rescue facilities. During the initial glide tests, and later on the first few test launches into orbit, the four-man crew will have standard ejection seats. Once operational flights begin, however, the heavy ejection seats will be removed.

That decision is not a particularly risky one, since the possibilities of launch aborts have been carefully studied. The Space Shuttle will have two solid fuel strap-ons and three main liquid fuel engines. The solids have triple-redundant igniters which have never failed in fifty flights of similar systems in use today. If the liquid fuel engines do not ignite, the solids will not generate enough thrust to lift the vehicle and the crew would sit tight and wait out the burn. If there is a failure or

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degradation of three nominal liquid fuel engines, the Shuttle would head out to sea, jettison the solids, and come back for a landing airplane-style at the runway near the launch site.

The manned exploration of the lunar surface will create new problems for space rescue of disabled vehicles and stranded astronauts. Despite the feasibility of some remarkable rescue options, the Moon remains a hostile and unforgiving environment.

The problems of rendezvous of two manned ships orbiting the Moon in different planes is as serious as the problem near the Earth. First, the launch of a rescue ship must be made from the Earth, since extensive launching sites on the Moon are not likely for a century. The flight time of such a rescue ship would exceed sixty hours. If in the meantime the endangered spacemen are on a collision course with the Moon, no personal retrorocket or heat shield will save them from smashing into the surface at several thousand miles per hour.

Nor could a rescue ship be launched from the Moon, even if one were available, except in the most exceptional situations. The Moon's period of rotation is twenty-eight days, not twenty-four hours like the Earth's. A potential rescue rocket on the Moon's surface is carried by the Moon's rotation through the orbital plane of every Moon satellite, but it takes up to fourteen days to do so. If the rocket is not already in the orbital plane of the crippled ship, it may take a week or more for a launch window to occur.

But the situation which in Earth orbit rules out the rescue of one orbiting ship by another because of the great amounts of fuel required to change planes is somewhat different around the Moon. First of all, any orbiting ship does carry a great amount of fuel: the fuel required to blast out of lunar orbit on the way back to Earth. That same fuel could be used in an emergency to alter the plane of the orbit enough to match trajectories with nearly any other satellite circling the Moon. The rescue ship would not then have enough fuel to return to Earth, but would have to wait the time of flight of a second rescue ship from Earth, carrying the extra fuel for the return to Earth.

The rescued Moon satellite could be another lunar spaceship or it could be a single spacesuited astronaut. Whereas in Earth orbit the prime goal of an endangered astronaut is to use the "bail-out kit" to get down to the surface of the Earth, an astronaut in trouble on the lunar surface must have a way to get up into lunar orbit where the possibility of rescue becomes larger.

One way of accomplishing this is through using a special lunar exploration and transportation device modeled after the Bell "Flying

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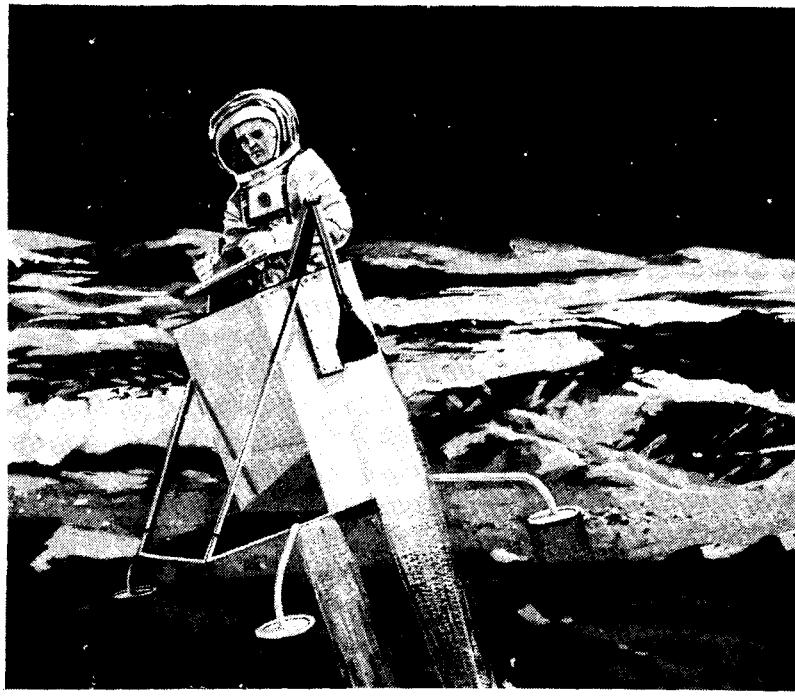
Belt" and the AMU (Astronaut Maneuvering Unit). Under normal conditions the "flying platform" would carry one of two men across the lunar surface. But in an emergency the device should be designed with the added capability to be fully fueled (perhaps from the tanks of a crippled Lunar Module or from a fuel cache) and to be able to carry one or two men into a stable lunar orbit. The exact plane of the orbit would be picked in order to make rendezvous with the orbiting mother ship most optimal. (The Moon's slow rotation rate gives no advantage to "launching eastward," a trick used on Earth to gain additional velocity by flying in the direction of the Earth's rotation. Moon ships can blast off into lunar orbit in any direction.)

Once in orbit and on board the mother ship, the astronauts could presumably wait out the rescue ship from Earth. This need not even be a manned ship, just a robot tanker with enough fuel to allow the still-operating lunar orbit ship to refuel and return to Earth.

Lunar Flying Platform for Moon transportation late in the Eighties. This device will also offer the capability to carry a spacesuited astronaut into lunar orbit where he can be rescued by the mother ship. (NASA)



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Moon rescue would become an established fact.

The rescue of crippled ships on fast trajectories far from the Earth (on an interplanetary voyage, for example) will be impossible for decades if not centuries. The delta-V requirements for another ship to be launched in pursuit, get there fast enough, slow down enough to match velocities, and have any payload left to do any good, are vastly beyond the capabilities of any spacecraft even being dreamed about for use before the end of the century. A spaceship launched beyond the Moon cannot count on rescue or any kind of physical aid from Earth.

Besides the old standby of redundant spacecraft systems, a new approach would quite obviously call for redundant spacecraft, expeditions of multiple vehicles which could in an emergency aid each other. For example, two ships with ten men in each might be launched on a two-year expedition to Mars. In the event of a catastrophic failure on one of the ships, the crew would transfer to the other, most of the scientific instruments would be jettisoned to make room, and the mission would be abandoned. (Although not entirely: once you're headed for Mars, the quickest and easiest way home is via Mars. It is nearly impossible to turn around and reverse your course; Earth wouldn't be where you left it anyway. When Apollo 13 was aborted halfway to the Moon, it still had to fly past the Moon to get back to Earth.)

In the future, the problems of space rescue will have to be approached at many levels. Spacecraft designers will concentrate on making critical spaceship systems as reliable and redundant as possible, while also building in to each ship the capacity for extended rescue-type missions. When a spaceflight is taking place, controllers will alert other space-faring nations to be ready, if needed, to mount a space rescue mission. Special equipment like AMU's, bail-out kits, and lunar flying platforms will give crewmen the option to abandon their crippled spacecraft and try to reach rescue forces on their own power.

There are already enough graves on Earth of brave men whose luck ran out on the road into or back from space. Although no single death was inevitable or unavoidable, no flight was ever one hundred percent safe. As the space frontiers expand, it is tragically certain that more men will die—of accident, equipment failure, misjudgment, even natural causes—in outer space, or on other worlds. Spaceships and crews will be lost in the depths of space, in close-Earth orbits, or on their final return into the home planet's life-giving atmosphere. Space rescue systems will try to make these occasions as rare as possible. ■

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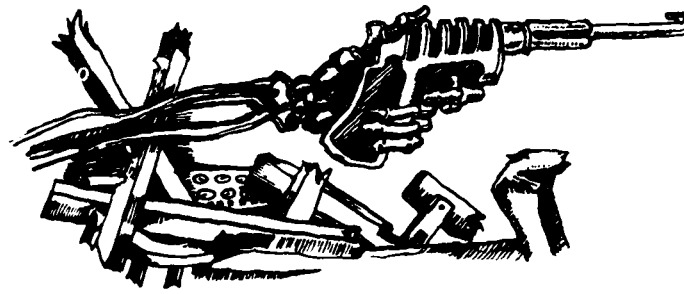

to live in alloy continuity

ERIC VINICOFF and MARCIA MARTIN

If "survival" is the first law of life,
what do you call "living"?

The office seemed to have an acre of floor space, mostly plush green rug-grass. The furnishings were of carved teak and darfir. Flickering polychrome panels made up the walls and ceiling, except where skylights opened on the starry night and large picture windows revealed a twentieth-story view of the activity of Terrabase. The panels filled the tall room with diffuse, shadowless amber light. Subdued music with no apparent source mixed into the illumination to create a mood that the reporter felt the moment she entered.

"Admiral?" she called out tentatively.

He was behind his desk, facing her but unmoving. In the dimness

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she couldn't tell if he was looking at her, or past her out the nearest crystal pane.

"Your secretary was gone, Admiral," she continued softly—the office demanded softness, "so I just came in. Your message stated that you wanted to see me about a story?"

"Your 'corder ready to tape?" the admiral asked. His words came slowly.

"Yes, loaded and ready. Just a moment, please." She set the bulky device on its monopod, touched several switches, then said, "OK."

The admiral whispered something to himself that she couldn't make out, then said aloud, "A story? Yes, I do have a story for you. I'm tired . . . tired of the kinds of decisions that have to be made in this office. My request for retirement was granted by Councillor Becker last night. It'll be officially announced at a press conference tomorrow morning."

The reporter felt dizzily excited, as she always did when eyewitness to history in the making. The admiral was an institution. For thirty-nine years he had captained Terra through a terrifying maze of wars, near-wars and starjacker raids in the hostile galactic void. For thirty-nine years he had survived governmental collapses, budget cuts, World Senate probes and six assassination attempts. For thirty-nine years he had fought, connived and bled to keep the TOG strong enough to prevent a recurrence of the horrors he knew so well.

But now it was all ending.

The reporter detected something off-color. "Why tell just me, here, at this hour?" she asked. "There's something more, isn't there?"

"Very perceptive of you. Yes, there's more. Another story, one that should have been told a long time ago . . ." His voice trailed off, as though he were lost in thought—or memory.

"How long ago?" she prodded.

For a moment she thought he hadn't heard her, but then he whispered, "Very long ago. During the Last Defense. I . . . I couldn't tell anyone then. They wouldn't have understood. They might not even now, but . . . but I can't keep it secret anymore. You've always reported my statements straight, so I called you."

The reporter said nothing. She knew that the story was about to spew forth, impelled by internal pressure with no assistance needed. And it would be big. Big? Her news instinct began to sniff the faint, elusive Pulitzer aroma.

"You recognize the music?" the admiral asked rhetorically. "Temulkta Blues," it's called. Back when I was commanding Orbsit B-26 my friend Steve used to hum it all the time. Nearly had me climbing the bulkheads . . ."

He paused again, then went on. "Yes, Lieutenant Steven Whitecloud of the Terran Orbital Guard.

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He wasn't a Star Medal hero like Yamasaki or Palmatier, but . . . well, maybe there's a point to his story. I'll let you and your viewers decide."

I was wrapped in a fetal ball, dry-heaving. My breakfast and lunch were already drifting amid the free wreckage and corpses. *Allah! Dear merciful Allah! Why?!*

Somewhere far away the battle was still going on, but that was another war, another universe—another me. There the raids against the apogee Orbsits had been feints, plunges by six or eight gunboats. There Lunar ConCom had fallen for it and sent every Fleet Reserve unit into high orbit. There the purples had hit them with everything but the kitchen recycler.

But I wasn't a part of that anymore. I had gone up in white heat when the suicide hulls nailed us, only to pass through death into the Christian hell of torment. Shock-born trembling rocked me in wave after mounting wave. My guts had long since passed the degree of pain that can be described.

Allah, why did I ever buck for Commander? Why couldn't I have found another way to prove myself? I . . . I never thought it'd end like this!

No matter how much I wanted to, though, I couldn't deny what was. I had a duty to the Guard, a responsibility to my late crew, and obligations to ninety-two friends who had been alive at the morning roll call. So far I'd failed in all three. But since my body refused to take me beyond guilt, I'd have to face life again.

One at a time I pushed my eyelids up. A patchwork of flickering STADEX screens stood out among their ruined fellows, registering heavy radiation bursts from farther along the Line, down by B-11 or B-12. The entire scene rotated in a stately clockwork arc.

I didn't want to look, but I couldn't help myself—TOG training cuts through to the subconscious. My mind assimilated data from the screens and noted that we had really bought it. The Line was blown wide open, at least nineteen Orbsits gone and the rest going. Most of the purple units were past Orbital Defense, diving down on Terra. Air Defense would soon be having its hands full.

No, no, NO! It wasn't supposed to be this way! We were supposed to win! The brass swore we had them six ways from Sirius! Old men make mistakes, but we pay! Allah, how we pay!

The rotating (which I brilliantly realized to be mine, not the universe's) brought more displays into view. They confirmed what empirical demons had already shrieked at me myriad times—the purple suiciders had taken out the fusion pit. Translation: two-thirds of B-26 didn't exist anymore. The Alpha 212 pods remained, but they

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couldn't generate antiprotons without power. The torps were all either spent in battle or H-blasted. The twelve Lockheed S-26 gunboats were drifting wreckage out beyond Luna.

Technically B-26 was "out of com." In reality, it had been reduced to a useless fragment.

Alloy, semiconductors, hydrogen plasma—and ninety-two human beings. Which is the greatest loss? To the Admiralty, perhaps, the first three, since they're in short supply. But I'm not retching over prefabricated components, damn it!

I couldn't evade by focusing outward forever. I didn't even have the poor excuse of being injured—the bulk of the command chair had saved me from the sprays of molten metal. Beyond wracking fear and guilt I was in fine shape.

Not even a flesh wound. I hid and lived. My crew . . .

I shook my head savagely and took shelter behind military SOP.

Assistance summons, TOG emergency drill number three. Eliminate the first seven procedures—the equipment doesn't exist anymore. But nine? Maybe. Just maybe.

Reluctantly I uncurled and grabbed onto the communications board. I wasted a minute making sure the laser-com couldn't be patched, then triggered the disaster flak. Surprisingly, the activator light turned green. If I had cared more about staying alive I would have celebrated. I looked out a port and saw the aluminum foil streamers spreading away from the hull miles in every direction—a target a scrubbed-face ensign with training radar couldn't miss.

But it won't help unless the whiteboats come looking for the wounded. They will, of course—if the purples don't take game, set and match first. In that case I die.

But the purples can't beat us. Allah knows, not even the sirgil-warriors of Arthos II could take Terra. Admiral Killeen is probably wiping up on them right now. A few hours, maybe a day to chase the dungdippers out of the system, then the whiteboats will come . . .

Through all of this I had not let my gaze slip from the duty at hand. I had not wanted to see what lay behind me. But now I turned around.

The command post resembled itself as it had been four hours earlier only in basic shape; circular, low-ceilinged and fifty-six feet in diameter. The white mylar surfaces had been mostly sheared or burned away, revealing onionlike layers of insulation. The control stations had been torn, twisted and smashed—a scattered few lights and displays still glowed bravely, but the vast majority were dead. Chairs had been warped and broken. Pieces of wreckage floated about the compartment.

Intermixed with the plastic, metal, bakelite and so on were eleven human corpses (the other

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eighty-one were either elsewhere on board or atoms floating through space). Mike, Celeste, Sean, Lelani, Abo, Kenung-Ute, Dee, Rodrick, Elladine, Gregov . . . they had been mutilated by physical forces that didn't care a bit about protoplasmic fragility. Blood and other, much worse things had splattered all over the CP.

I shut my eyes and screamed. My gut burned white-hot, bringing tears. Even if they had been strangers, the scene of horrible death would have sickened me. But they had been my friends, my comrades in arms. Nothing in my twenty-five years had prepared me to cope with this.

Lastly I forced myself to look at Steve. He wasn't the most terribly mutilated, but his death was the hardest to bear. He had been my best friend, closer than a brother since we never resented each other.

I can hardly believe it's you, Steve. It isn't! That charred, cold piece of meat isn't Steve Whitecloud! But where are you, Steve? Where has my incompetence sent you?

He had been in the path of a spray of molten shrapnel and was a mess; arms and legs burned to the point where there weren't even stumps left, sexually ruined, eyes burned out, scalp bald and carbonized, and not much face left.

I stared at him, deliberately torturing myself. *Look, damn you! Look at what you've done!*

His head moved ever so slightly.

I didn't shout his name or shriek joyfully or anything like that—there wasn't time. I reached under my destroyed control station, rooted around and came up with the medikit. Then I rushed frantically over to Steve. The heavy metal-and-plastic case came in handy as I used it to ward off floating bits of whatever. My boots enabled me to walk on the warped deck despite the failure of the grav-field. Even so, it took me an agonizing amount of time and effort to maneuver into the middle of the compartment.

Steve hung limply in mid air, a scrap of his uniform pants hooked on a twisted deckplate edge. Air currents—caused by slow leaks somewhere—rocked him like a kid's balloon on a string. I couldn't think of any place where he would be more comfortable, so I left him there. But I made a point of shoving flotsam away if it showed a course potential for bumping into him.

First I made sure Steve was still alive. That wasn't hard; I touched him and he screamed. The hoarse cry reassured me. He was conscious, at least, and he could make sounds.

Allah be praised! Hang on, Steve! I'll do what I can, but it has to be your fight!

I could see Steve's condition easily enough because his uniform had almost totally burned away. The remaining ribbons were no longer

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glossy white; they were red. Dried blood and blackened flesh covered two-thirds of his body. Furrows of various depths crisscrossed his back, and interior anatomy could be seen in cross section where his arms and legs had been attached. His face . . .

I almost began dry-heaving again. If it weren't for the TOG psych department I think I would have passed out. Their hypnotic buffers against shock held me together—barely.

I dreaded touching him, but squeamishnesss could be fatal, so I went to work. I couldn't find any bleeding worth worrying about. Most of his wounds had been cauterized by the molten alloy; the others were clotting. Just to be safe, though, I dug out the air injector and gave him 60 cc of stralazine—the "wonder drug" that kicks bone marrow into producing fifty times more blood than usual—and a huge dose of hi-pro nourisher.

Desperately struggling to remember what little I knew about first-aid, I shot him full of painkillers, antishock serum and just about everything else in the injector rack.

I put my lips near where I knew his left ear had once been. "Steve . . . Steve . . . can you hear me?"

"Who . . . there . . .?" By the sound of his voice he didn't have much throat left.

I told him, then added, "I just gave you something to stop the pain. You'll feel better soon."

"We . . . bought it . . . bad?"

I couldn't admit it at first—the words wouldn't come. But finally I whispered, "Yeah. Everyone but us."

"Fun . . . war, eh?" He laughed—a weird noise coming from a black-burned, lipless mouth.

I knew he meant it as sarcasm, but it shook me anyway. *Prophet's beard, this war* was *fun—until now. Good food and high pay. Glamor. All the girls we wanted. Excitement, plus the feeling of doing something really important. Not dirty like earlier wars. Neat and clean. Death almost always comes too quickly for fear or pain, and modern weaponry leaves few wounded.*

Call Steve an exception.

Even the killing had been made palatable. Purples weren't *real*. Spatial warfare was like a big game—eliminating blips on a STADEX screen.

But someone had thrown dirt in my playpen, and I wasn't sure I could handle it.

"I can't . . . see you," Steve said levelly. "I'm . . . blind?"

To keep him from wasting strength with more questions I described his condition. Then I filled him in on our situation. "So hang on," I finished. "The whiteboats will be out here soon; they'll find us for sure. LunaMed can—"

"Can what?" Steve cut in. "Keep me . . . going? Going . . . where?"

"I think we can hold out," I said,

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ignoring his questions. "The recycler is running on emergency power. I don't think we're losing too much air; the bulkheads must be tight. We've got plenty of food and water in the disaster kit."

"Good . . . luck!" Steve gasped out.

"The same to you, friend. You just relax and be patient."

"Cram it . . . You know what . . . I mean!"

I did, but I wouldn't admit it, even to myself. Steve and I had been teamed up for almost ten years. I knew the workings of his mind like I knew my former control station.

Steve, I thought you were dead. But you aren't! You're alive, and you're going to stay that way!

"Damn it, Steve! You're not going to die! No way!" I was talking fast and loud, almost shouting. "Your arms and legs and head are messed up, but nothing vital seems damaged!"

"You . . . helluva doctor." Steve coughed until his destroyed face turned dark red. I began to worry more than ever. Maybe I was wrong, maybe he had been torn up inside. Internal bleeding might kill him at any moment, and I couldn't do a damned thing about it.

But he wasn't coughing up blood—a hopeful sign.

"You always . . . were stupid," Steve said. "I'm not afraid . . . of dying, except . . . I hate to leave . . . you on . . . your own. You need . . . me to . . . find girls for you."

I didn't feel like continuing that old argument right then, so I said, "Sure I do."

"Sorry," Steve said, "but I'm . . . going to be selfish . . . this once. I'd rather be dead than . . . have my brain wired into . . . a Carroll Box."

Then I was sick again, a stomach spasm that doubled me over. *A Box! Allah, no! Not for Steve!*

So I'm an idiot. I don't think. My image of the future had been Steve getting patched up at Luna-Med as good as new. But when I thought it over—as Steve obviously had—I knew better. There was nothing left to patch, not even enough for prosthetic limbs. Steve could be kept alive; a vegetable, a blind quadriplegic at best.

He was too far gone for any hope of living even quasi-normally. He'd probably need machines to keep his body from failing—for the rest of his life. So, of course, they wouldn't bother. They'd cut the brain from his skull and install it in a Carroll Box.

Something was coming at us.

"Christ, what is it?" Steve whispered in my ear.

"Don't ask me!"

Freshman registration day at UC Berkeley. Steve and I were wandering through miles of gleaming corridors, getting oriented.

Later we found out. A junior

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filled us in. It was a Carrollite—one of the first ever, a girl whose body had been crushed in a car accident.

Why people call them Boxes I don't know. They're actually spheres of white-painted alloy three feet across. They ride roughly six feet from the ground on antigrav fields.

The "eye" lenses faced forward as she came toward us, but the sphere could rotate so that she might look in any direction. Below the lenses were the audio speaker and pickup. Two prosthetic arms extended from the sides.

We turned away while the thing rolled by. "Weird," Steve breathed. "Really weird."

In four years of college neither Steve nor I ever got past those looks, because we ignored her. Everybody did. In classes we never glanced her way, nor talked to her unless we had to. Her only acquaintances were a few morbid souls fascinated by her condition. She didn't try to mix—which probably saved everyone involved a lot of grief.

Just another machine in a world of machines.

I guess Steve remembered her too. "I'm not going . . . to be put in . . . a Box!" he gasped. "No girls ever . . . cuddle up at night . . . with iron balls!"

"Don't worry about it," I said softly. "You're not in any shape to think clearly right now. Take a nap."

"No!" Steve's voice was urgent. "This is important! The whiteboats might . . . be out here . . . soon!"

"I sure hope so!"

"Well, I don't . . ."

"*Get some sleep, Steve.*" I looked at the medikit, wondering if a knockout shot would hurt him.

"Kill me!"

For long moments I just stared at him stupidly. The words didn't make any sense—they were just two meaningless syllables.

"Say again?"

"You . . . heard me! Put a beam . . . through . . . my forehead. Quick . . . neat . . . passage."

Then it clicked home.

I was shocked to the innermost core of my being. And scared. And nauseated. And about six or seven other emotions, all mixed too finely to be differentiated. The whole load came down on me like the shock wave from a sunburner.

It's so damned unfair! *Allah, what have I—Steve and I—done to deserve this?*

"Say again?" I was in a shock-born rut.

"Kill me . . . please! Now! It's hurting . . . a lot!"

"I'll give you another shot of painkiller." I reached for the air injector.

"Christ, you're a . . . stubborn one. If I could . . . I'd do it . . . myself. But I . . . can't! I need . . . your help!"

I didn't answer; instead I gave him the shot. I waited a minute

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then asked. "Feel any better?"

"Yeah. Thanks."

"Steve, I'm not going to kill you." The situation was so serious and so bizarre that I felt my sense of reality slipping. "I can't."

"Gutless . . . wonder!"

"Getting me angry won't help. Knock it off."

"Everyone else . . . bought it . . . but us. What's . . . one more?"

That targeted my raw spot dead center. *Ninety-two lives. My responsibility. The commander is* always *responsible, especially when things go sour.*

I had made wrong decisions. If I had seen that the first radar display was a feint, if I hadn't wasted my torps, if . . . but warfare was full of tough choices. I had made the best I could—now I'd have to live with them.

"You hanging . . . onto me . . . to ease your conscience?" Steve whispered. "Am I going . . . to be the act . . . of redemption that'll . . . make up for . . . the others?"

"Shut up, blast you!"

I drifted over to the nearest port and looked out, hunting for a whiteboat. At least I told myself that was what I was doing. I tried to get some air into my lungs, and to make my stomach settle down.

Nothing. No rescue mission; just space and stars and wreckage and foil. I was trapped in a charnel pit with my half-dead best friend, who was totally insane.

Suddenly I couldn't stand the thought of looking at Steve again. I hated the burden he had become, the pain his words had hung on me. I knew that I had done everything I could for him for the moment, so I stayed where I was.

Trying to force all thought from my mind, I ate from a ration pack and took slow sips from the water tube. My head was erupting like Mount Lassen. My stomach had become a lump of dull agony. Eating was hard work, and keeping it down even harder, but I needed to do something to calm down—and the energy would come in handy. I felt about as strong as watered-down celery soup.

But my mind refused to ignore the situation. I found myself wishing that the destruction of B-26 had been complete. *Maybe he'll change his mind after being a Carrollite for awhile.*

Yeah. Or maybe he'll hate me for the rest of his life.

I went over to Steve and whispered in his 'ear', "Damn you, let me off the hook! OK, you want to die. You might anyway. But don't ask me to kill you! Wait until they put you in a Box, then do it yourself!"

"I can't!" Steve replied. "You know . . . they use hypnoconditioning . . . to make that impossible. Most Carrollites . . . don't like their new . . . homes I guess."

I nodded even though he couldn't see me. So much for that

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out. I'd have to face this straight on.

"The Boxes aren't that bad!" I insisted. "Carrollites can do almost everything a . . . a normal person can do! Some things you can do better! No more sickness or pain, and you'll live a couple of centuries at least!"

"Hating . . . every moment of it. I'd . . . make everybody sick . . . just looking at me. Make . . . myself sick too. Why should . . . I hassle it? I'd have nothing . . . no feeling, no taste, no smell, no . . . fun at all, and . . . no love. A lot of . . . good I'd be to the ladies . . . or to my friends, for . . . that matter!"

"Prophet's beard!" I was getting angry. "There are lots of good things you *can* have, if you don't give up!"

"I'm no . . . intellectual . . . like you! Life's got . . . to be fun to . . . be worth living!"

"It can be, if you let it! Just as fun—better! Even in a Box! You say you'll have nothing! Wrong! You'll have your mind! Yeah, that cursed dense gray pulp under your skull! Use it!"

"What's a . . . mind without a body . . . except a freak!"

"Your mind's what makes you *you*! Damn it! You're letting stupid, ancient fears rob you of a shot at a richer life!"

"I'd trade . . . all of that . . . and a lot more . . . to get my . . . body back the . . . way it was!"

"Even that might happen someday—if you don't quit first! They're bound to crack the cloning problem someday!"

"Yeah, that's . . . what they've been . . . saying for decades . . . now! I'm not . . . the patient type! Waiting's . . . no fun!"

"You're a damned hedonist!"

"Guess so." Steve coughed. "If being . . . a Carrollite is . . . so great, why don't . . . you buy yourself . . . a Box?"

That stopped me cold. If I were in Steve's place, how would I react? I tried to imagine it, but I couldn't. It's not a situation you can honestly envision; it has to happen to you.

Then something bumped the hull.

A whiteboat! I'm off the hook! I reached the port in two seconds flat.

Only it wasn't a Medical Rescue unit. It was a damaged purple gunboat. The silver egg maneuvered clumsily, underpowered and riddled with holes. After settling airlock-to-airlock against B-26, it latched on with electromagnetic grapples.

Another ruined loser hunting for a safe haven. But this one would probably try to kill both of us humans on sight. That thought got my adrenaline rolling; regardless of Steve's frame of mind, I had decided that I wanted to stay alive.

I had no time to tell Steve what was going on, or that I planned to use him as bait—I think he would have been glad to hear the latter.

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He floated almost in the center of the circular compartment. The only entrance to the CP—and therefore the only way the purple could get at us—lay in the stern wall.

I needed a hiding place, so I went forward to the nearest of the wrecked chairs that faced the control stations. But crouching behind it was no good—there wasn't enough left to shield me.

The drifting wreckage gave me an idea. I heard the distant *Thunk-waash* of the airlock cycling; I didn't have much time. The prizes were food and air and water—things worth killing for in space. The purple pilot had apparently been unable to make rendezvous with his mother ship. Since his boat was only stocked with twenty hours of oxy-helium mix and couldn't reach either Terra or Luna in its present shape, his only chance was to hide out in a damaged but airtight sublink and hope *his* rescue teams would come first.

The three of us could have waited together in peace for all I cared—there were ample supplies. But I didn't see any way to put my peaceful intentions across. Communications between our two races were strictly tasks for philologists armed with computers and lots of time.

Even if we could have talked it over, though, I doubt we would have signed any peace treaties. The hate—born of death, destruction and mistakes—ran too deep. Both our races were young, vital, aggressive and newly exploded into interstellar space. When our "spheres of influence" began to impinge on each other, war became inevitable.

No right or wrong sides in this war—if there ever are. Just self-interests in conflict. But how has all of this served my interest? Or Steve's? Or even that of the lost warrior out there who's coming to kill us?

Perhaps we could have worked something out by sign language. But I couldn't take the chance. I had responsibility. A command responsibility. Purples usually killed human beings if given the chance—no quarter.

So I got ready to beat him at his own game.

I built a solid clump of flotsam in front of me, welding pieces into place with low-power bursts from my Mark VII sidearm. I left a hole for the gun barrel and a smaller one for sighting. Getting into position, I waited.

Steve wants to die. I'm his friend; I should do what he wants. But he's my friend; I can't murder him! The thought of being a Carrollite scares him silly, but it's living. He'll see that when he's not so crazy.

Or will he?

Steve was in front of me. The hatch lay beyond him and a little to the left. I felt weird about using Steve as a decoy. Was I trying to weasel out of my problem? Would I have ordered a fit and ferocious

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Steve Whitecloud into the same risky position?

I thought so. At least I hoped so.

Maybe he's right. Maybe being stuck in a metal body is too gruesome to be endured. But it's not my decision; it's his.

Purples are more reckless than cautious—that's why we usually blast them in near-equal fights. The hatch opened a couple of feet, and the hornlike, transparent space helmet of a purple poked through. For long seconds three probing eyestalks scanned the scene of disaster. I was counting on Steve to lure the purple into the CP; he would want to check on the status of the human crew before moving in. I was sure that in the poor light he would have to take a closer look, and perhaps finish the job.

Who am I kidding? It's my decision all right; I have to blow Steve's brains out or not. I have to decide whether he's rational or not.

A bulky claw gripping a blaster snaked around the hatch. It aimed straight at Steve. I began to sweat. *Come in, damn you! Don't shoot Steve! Look at him; figure he's dead! Come in, you bloody beast!*

I aimed my Mark VII at the blaster and was about to try the impossible shot when the alien weapon swung downward. The purple stepped fully into the CP.

I've never killed a human being before. Can I? Especially Steve? "Thou shalt not . . ."

I should have burned the purple then, but I'd never seen a live one before, so I stared. They look like monitor lizards with presumptions of manhood.

Is it right to wish for death? And who decides? Me? Steve?

The purple moved slowly toward Steve. I heard, muffled by the helmet, his alien mutterings. He was tense, cautious. His blaster pointed at the metal deck.

It all comes down to me, dammit!

Something caused Steve to scream.

The blaster came up. I fired. My beam sliced the purple in half at the waist. A dying spasm made his fingers close on the trigger of the blaster. Two seconds of red flame skittered across the floor.

Do I have the moral right to kill Steve—even with his permission?

I rushed over to Steve. The wild bolt had missed him, but something was definitely wrong. He was moaning. I gave him another painkiller shot, hoping I wasn't doing more harm than good.

Am I being selfish? Is the thought of losing Steve holding me back? He's been a big part of my life. On the other hand, by killing him would I be getting rid of a ghastly cripple I'd otherwise have to live with?

Too . . . damned . . . many . . . questions! Allah help me!

"You got him," Steve whispered. "Good. I heard the . . . fight. A . . . purple?"

"Yeah."

"I beat you . . . stubborn old

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buddy. I'm . . . my body's giving . . . up." Steve's face was turning dark, almost black. "You might . . . name a kid . . . after me someday . . . or something."

"Sure." I think I was crying. I know I felt sick. "Is the shot helping?"

Steve coughed, and this time blood flew out of his mouth in little globules. "I feel . . . fine. Just . . . fine!"

Again the hull jerked. Again I sped to the port.

A big, bad, beautiful whiteboat floated not a dozen yards from my eyes. Already spacesuited figures were riding rocketsleds toward the emergency lock.

"A boat's here!" I shouted in Steve's "ear."

He coughed. "Damn you!" His voice was hard to hear. "You let . . . me down!"

I stared down at him, at the hideous, pitiful thing he had become. But I didn't see that. I saw him as he had been—blond, fair-skinned and vibrant. I saw his life as it had been, active and sensual. As he had wanted it.

"Are you afraid?" I asked softly.

"Of . . . dying? Hell, no! I'm . . . afraid of living . . . the way I'd . . . have to!"

Then I understood. Steve's answer was wrong—for me. But for him it was right.

I drew my Mark VII again and placed the emitter bell against his head.

Duty and friendship. Duty *or* friendship. The duty of friendship.

Allah forgive me!

I depressed the firing button.

My mind blotted out all sensory input from what happened then with a single phrase, repeated over and over again in a rising crescendo:

Let you down, Steve—never!

The reporter switched off her holocorder. When she spoke her voice was brittle with unconcealed hostility. "I'm surprised the Guard didn't hold a little thing like murder against you."

"I never told them. Blaster and Mark VII beams are almost identical; my report attributed Steve's death to the purple, and it was never challenged."

"And you've been able to go on all these years, accept all the honors you've received, knowing that you're a premeditated killer?!"

The admiral turned away, as if to shield himself from the heat of her anger. "I did what I had to do," he whispered. "What Steve wanted. He made his choice. As for guilt," he turned and stared at her, "you know nothing about how I've suffered! Nothing at all!"

"Hypocrite!" she hissed. "All your fine talk about the merits of being a Carrollite! Then you give in to the same stupidity, illogic and ignorant terror that you argued against!"

"I had hoped you would under-

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stand." The admiral's voice was barely audible. "There are no right or wrong answers to the Carrollite question—just different choices for different types of people.

"Some don't see anything worthwhile in life in a Box. They live for the physical pleasures, and without them existence loses its value.

"But others realize that humanity lies in the mind, not the body. They find life satisfying—perhaps even more satisfying—as a Carrollite. Happily, the vast majority of people today fit into this category."

The lecture had the same effect on the reporter as a red cape waved in front of a *Bos taurus.* "But you never *gave* him a choice! You let him decide on superstition and fear, before he could really *know*!"

The admiral turned away again. "I'm sorry you feel that way. At any rate, you have your story. Would you please leave now."

"You bet I will!" She quickly gathered up the holocorder and headed for the door. It opened at her touch, but before she left she faced him and exclaimed, "It's going to give me real pleasure to blast this all over the six o'clock news! Murderer!"

The admiral's frail, ancient body sank tired into the overstuffed leather chair, and he sighed. "I thought she would understand," he whispered to himself as her gleaming white body rode into the darkened outer office on its invisible legs of antigrav.

"I really thought she would understand." ■

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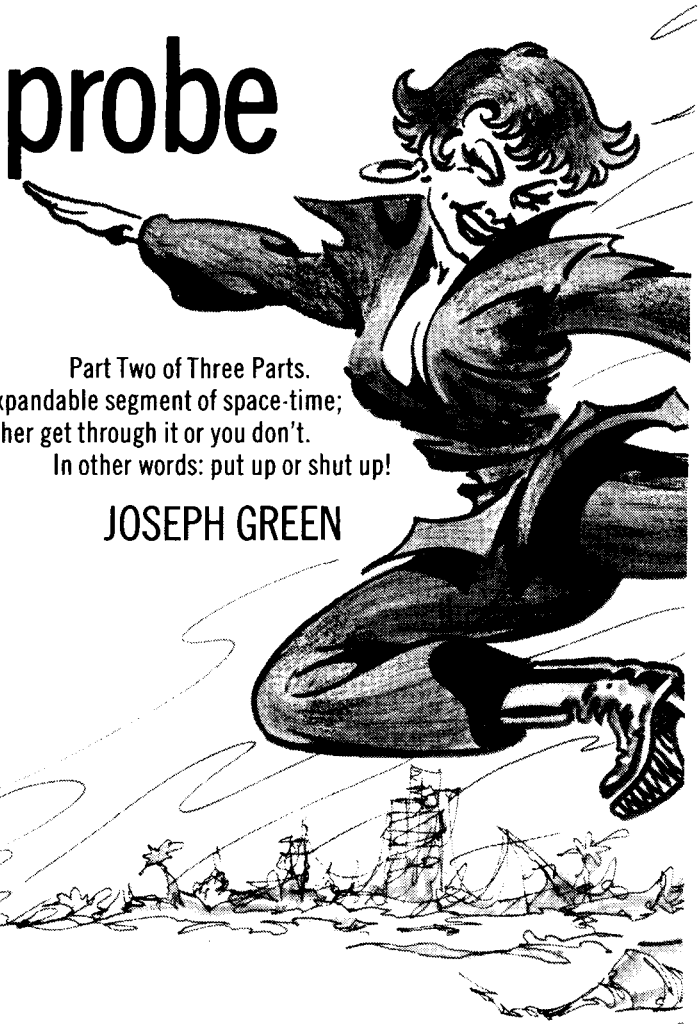
star probe



Part Two of Three Parts.

A launch window is a nonexpandable segment of space-time; you either get through it or you don't. In other words: put up or shut up!

JOSEPH GREEN

KELLY FREAS

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SYNOPSIS

On a Sunday afternoon in 2011 the world is startled by an announcement from the new lunar observatory, MoonEye, that a traveler from deep space has entered the Solar System. HAL HENTSON, *president of Rockets International in Florida, and* JODIE CARSON, *a Boston leader of the antitechnology movement, greet the news with very different reactions. Hal orders his deep space tracking team to monitor the object's speed and direction. Jodie flies to Florida and prepares to lead her followers in the New Friends of the Earth (FOE) against any possible attempt at interception.*

In Florida Jodie learns Hal Hentson is preparing to temporarily resurrect his father, JARL HENTSON, *by using new computer techniques to imprint the dead man's recorded neural patterns on the brain of Hal's idiot son, named* JARL *after his grandfather. The first Jarl was an astronaut, the first man to land on Mars, later the founder of Rockets International, and finally a one-term President of the United States.*

Hal has a painful fight with his wife, LILY BREWSTER HENTSON, *over his plan to utilize their son's brain. Hal wins and takes young Jarl into the labs to start the imprinting operation. Hal wants to consult with his father about the unexpected visitor, which is apparently an automated probe from another star system.*

Hal appoints an engineering study team, which reports that the largest rocket in stock can intercept the probe, but not return. The probe will arrive the next Monday, and perform a fly-by of Earth on its way to Saturn. The intercept rocket must be launched toward Saturn Sunday afternoon.

PAT PAJICK, *Hal's assistant, tries to locate an astronaut willing to sacrifice his life to capture the probe. Hal offers a million-dollar payment, but no one will volunteer. Hal, an experienced light plane pilot who tried and failed to become an astronaut, decides to go himself. His staff and friends talk him out of the idea. A light plane pilot could not absorb the amount of training needed in the time available.*

PEPI ASTURIO, *a close friend of Hal's and the company physiologist, suggests that if the imprint operation is successful a highly experienced astronaut will be available, one who would almost certainly volunteer—the elder Jarl Hentson's persona in the younger man's body.*

Hal automatically rejects the idea, since it would involve the sacrifice of his son's life. Then he has second thoughts, and finally realizes there may be no other way. For the moment he decides to start retraining his son/father in the company's flight simulator, while reserving the option to go himself if the imprinting is not fully successful.

Some of the members of the local FOE group work at Rockets International, and report the decisions

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there to Jodie. She decides to stop the planned launch.

Jarl Hentson the First awakes in the flight training simulator, with his mind deeply confused. He has memories up to age fifty-six, but is in a young body. He attempts to learn why he is training for a space-flight when he has long been out of service, and the flight controllers refuse to answer and put him back to sleep.

WARDELL DAVIS, *the Government space agency representative at Rockets International, hears of the plan to intercept the probe and warns Hal Hentson not to try it on his own. Since Rockets International is primarily engaged in Government-paid space activities, defiance could ruin the company.*

Jodie and her FOE group learn that Hal intends to defy WorldGov and attempt to capture the probe. She arranges to have a thousand members gather at the launch site Sunday, so close a lift-off would kill them all. But she also learns from a young woman in the group, DIANA SHARP, *that Hal Hentson has a secret identity in which he relaxes on weekends, that of swinger Alexis Martin. Diana has had a recent affair with him. Jodie decides to kidnap Hal and hide him away until Monday, in the belief the launch can't proceed without him.*

Jarl Hentson awakes again, this time with his mind almost clear. He is back in the flight trainer. The flight controller asks him to practice for a planned mission, one with strange requirements for the pilot. Jarl trains as directed, but demands to know what is happening. The controller tells him about the probe and the mission to intercept it, but refuses to discuss Jarl's correct age or the new body he is in. After the training session Jarl is put back to sleep.

The Government obtains an injunction against Hal and Rockets International to stop the launch. The FOE people announce they will crawl up the rocket nozzles if necessary. Hal goes out as usual on Friday night in his secret identity, to relax for a time.

At his regular nightclub Hal dances with Diana Sharp, but becomes intrigued with a lovely dark-haired stranger who seems new. Her name is Jodie, and she is there with a female friend named STROBE. *Hal dances with her several times, and stays with her until the place closes. Strobe has already left, and Jodie asks Hal to see her to her apartment, saying she is a summer visitor.*

Thinking that this has been an easy pickup, Hal drives Jodie to her apartment. She ushers him inside, and flicks on the light. Strobe is leaning casually against the wall, a gun in her hand. Jodie calls, and three men carrying a rope file out of the bedroom. They tie Hal up as Jodie introduces herself as the militant antitech protest leader, Sarcoma—but learns Hal has never heard of her.

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Hal asks why Jodie/Sarcoma wants to stop the launch. She informs him she is a cancer in the tissues of technological man, and pushes him into a soundproofed bedroom. The door closes behind Hal, and he hears a lock click.

Part Two

From the Master's Thesis scrapbook of Jarl Hentson:

Excerpt from an interview with Jacob Bronowski conducted by Science News editors Kendrick Frazier and Robert J. Trotter . . .

SCIENCE NEWS: . . . What about anti-science attitudes?

BRONOWSKI: Five years ago when the BBC and I started talking, one of the things that most moved me was when I was told by the senior BBC producer in charge of science programs as a whole that this might not be a good time to do these programs because the young people are in general anti-science. Well, I said, that's the first really persuasive thing that anybody has said to me. In that case I regard it as a duty to speak out about what I think to be the true philosophy of science.

SCIENCE NEWS: What do you say to those who would reject rational, logical thought?

BRONOWSKI: I recall one student group to which I was talking about the behavior of the big primates like the gorillas and how it was different from human behavior and why that had a great deal to teach us about our place in the world. And I remember one student saying, "I know the chimpanzee has his bag, and I have mine, what else are you telling me?" And I said, "Well, how do you know this?" and he said, "I know it, I know it, I know it right here in my gut." And I said, "Well, the last person I remember telling us he knew it right there in his gut was Hitler, and incidentally he knew in his gut that you were a species of chimpanzee and not a species of Man." (This happened to be a black student.) "Now the reason we fought Hitler was that we thought the human species had other organs of sensibility than the gut. We know because we've really taken pains to try to find out. When I tell you about the chimpanzee and about Man. I may be wrong, but by God I've tried to be right, and that's more than could be said about you and Hitler."

—SCIENCE NEWS
Vol. 104, No. 23
December 8, 1973

Chapter 6

Friday, June 10, 2011

The ceiling light was on. The first thing Harold saw was that all the walls had been lined with acoustic tile, thoroughly nailed down. The room contained an old-

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fashioned mattress-and-springs bed, a small table by its head, a dresser, and an easy chair. There was an adjoining bathroom, also with covered walls. There were no windows, but rectangular bulges in both rooms indicated areas where they had been boarded over before the tile was nailed on.

Harold inspected the bolts in the door hinges; they were welded in place. Someone had gone to a good deal of work to convert an ordinary bedroom into a cell.

It did not take Harold long to complete his inspection. There were several old FacSheets and books to read, and an ancient built-in television set; evidently prisoners didn't rate Tri-D. Some kind soul had left a bowl of apples and oranges on the bedside table.

Having his hands tied behind him was uncomfortable. Harold resigned himself to the situation and lay on his side on the bed, trying to think.

And with thought came fear.

Wednesday he had been ready to risk his life to capture the probe, despite the high odds against success. He would still do so Sunday if necessary. But there was a vast difference between dying in action and having his throat slit like a pig in a slaughterhouse. The thought of seeing death approach, while he waited helpless, gave him the horrors.

Harold did not believe they would actually release him Monday. That statement had been a ploy to make him accept captivity quietly. It was safest for them to kill him after the launch had been stopped. Free, he would always be a danger to them.

The minutes dragged slowly past. Harold was too uncomfortable to sleep. As he lay in silence a second fear gradually overcame him, one he had not faced too often—the fear of failure. He wanted that rocket launched to rendezvous with the probe. He had not felt so committed to a cause since his futile attempt to become an astronaut. In a way this intercept could be his redemption, his exculpation for that original failure. Surely capturing the probe would be as important to the space program as the contribution of almost any astronaut.

If indeed it could be captured. If the attempt was made at all. If, in fact, he emerged from this room alive to confront his failure.

Harold lay on the bed for what seemed an endless time, worrying and fretting.

It was just after four o'clock when the door finally opened. He heard voices in the living room, but they faded when Jodie pushed the door closed. Evidently it was well sealed with weather-stripping.

"Comfortable?" she asked pleasantly.

"I'd be more comfortable at home, thanks. And please untie me."

"That, I will do for you." She

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crossed the room as Harold rose and turned around. "Since you often stay gone on weekends, no one is going to miss you until near launch time Sunday," Jodie added as she tugged on the knots. "And without you there, we don't think your vice-presidents will have the guts to go ahead."

The rope came off. Jodie tossed it to the floor and seated herself in the lone chair. She said, "Sit on the bed and we'll talk a minute."

Instead Harold took three steps and stood looking down into the very pretty face of his captor, rubbing his sore wrists. Jodie calmly returned the stare. "Don't get any brilliant ideas about using force on me, Jesus. I'm a black belt, and about twice as strong as I look. You're an office slug. I can take you in a fair fight."

Jodie obviously believed what she said. And remembering their several dances and the lithe, easy way she moved, Harold could accept that she was in excellent physical condition. But the idea that this small woman could whip a seventy-seven-kilogram man who religiously did his dull workouts in the health spa twice a week was silly. That was one of the many myths the antitechs believed.

But there were three men just outside the bedroom door, and probably Strobe and her pistol. This was not the time to attempt an escape.

Harold studied Jodie in silence. It seemed incredible that two hours ago they had been sharing a passionate kiss. He had hoped for a pleasant and relaxing night with this woman, knowing he would be working long hours over the weekend.

The damnable part of this was that she still seemed highly desirable. Her appeal had grown stronger; it should have diminished when he learned she was one of the antitech leaders.

A slow smile curved the full lips. Very quietly Jodie asked, "Do I still look like a sexob to you, Mr. Harold Hentson?"

Harold turned away, still rubbing his wrists.

"I wanted to talk because I'd like to learn how your mind works," Jodie went on, the voice much more friendly. "I'd like to know why you are so convinced we need to capture the probe."

Harold shrugged. "My reasons are obvious. That craft represents the next level in propulsion technology. If we can capture it whole, we can save twenty years and billions of dollars in development funds." He told her in detail what the RI science staff had theorized about the probe's fusion-fission reaction cycle, and possible applications.

Jodie nodded, her face very intent. "OK, so maybe we could use it to produce power on the ground. So what! Does having more power to burn make people happier? And

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do you really think more than a very few persons want to send astronauts or unmanned probes to other stars?"

"Probably not." Harold had to agree.

"In the end, we grow old and we die. It's been that way a long long time. And all of your mighty science hasn't been able to add a year to the normal human lifespan. In the face of inevitable, unavoidable death—isn't it a crime to ask someone to devote his life to building something that won't bring him any direct benefits?"

"You're skipping blithely over the fact that *most* people now live to be seventy or better," Harold pointed out. "It was once just a very small percentage. We owe that gain to science, which brought improved nutrition and medical care."

"You miss my point. When life is so short, every individual should get as much out of his as he possibly can. How can you justify starting generations-long projects? Why should society make commitments that most of the individuals involved won't live to see completed?"

"Because Man is a social animal!" answered Harold, rising to pace the floor. "We have to live and work together. Each and every one of us can have separate personal ambitions, but a society has to have goals that apply to all. Otherwise we fragment, we split apart into warring little segments, and ultimately into the final reduction, the individual alone. And a society can accomplish more for its members than any individual can possibly do for himself, no matter how hard he works."

"But why *must* we 'accomplish'? And who is to decide what?"

"The second question is easy. The leaders of the people—governmental, scientific, philosophical, religious—they decide what, as always. As for the need to accomplish—I think it's part of the basic nature of Man. How can there be a more definitive answer?"

"It's more nearly a basic tenet of Western Civilization," said Jodie, rising. She tapped on the door. It opened after a few seconds. Harold saw that one of the guards was standing in front of it but well away, holding the pistol. He was out of easy reach. And Harold would almost have bet a second man was standing against the wall, just out of sight. These people seemed very professional in their preparations, as though kidnapping was an old and accustomed tactic with them.

Jodie said good night and walked out. The door closed smoothly behind her.

This time Jarl awoke in bed.

His mind seemed foggy and dim. He could not tell if this was from sleepiness, or the problem he seemed to have with his memory. After a time he awoke again, to re-

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alize he had fallen back asleep. He sat up to prevent further dozing, felt dizzy, and waited, upright, until that passed. Then he got slowly and carefully to his feet.

The disorientation was gone. He felt strong—and hungry again, as usual. He looked around the small room. It was a typical hospital setup, with a dresser, adjustable bed, and adjoining bathroom. He used the latter, then searched for clothes. The dresser was filled with them; all were his size. (His *new* size? This time he tried to openly confront the strangeness, the wrongness—and discovered he simply did not know what to think. He did not have enough info. It would have to wait.)

Jarl shed his hospital gown and dressed in a dark blue two-piece outfit with a matching wide belt. He found some short black boots that fit nicely. He barely had them on when there was a knock on the door.

"Come in!" Jarl called, and a short, olive-skinned man of about forty entered. He was on the plump side, but moved with brisk energy. Jarl recognized Pepi Asturio.

"Pepi! By God, now maybe I'll get some answers! But first I want some breakfast, and to stretch my legs a little. Where's the nearest food?"

Pepi grinned. "Hello, Jarl. The company cafeteria is closed on Saturday, but I'll send out for breakfast. I'd rather you didn't leave the area yet, but we'll walk around a bit if you like."

Jarl followed Pepi into a corridor, and down it a short distance to an anteroom. A pretty young black girl in a nurse's uniform sat at the reception desk. Pepi asked her to have breakfast sent in for Jarl, then led the way outside.

They were at the rear of a building Jarl recognized immediately. It was the RI Executive Tower. And the one where he had awakened was the Basic Science Laboratory. To his left, a half-kilometer away, was the massive bulk of RI Plant One, where the astronaut flight-training simulator was located. The buildings seemed little changed from the way he remembered them.

"What year is this, Pepi?" Jarl asked as they set off toward Plant One.

"It's 2011, Jarl. June 11, to be exact."

"Then I've only been—gone—five years?"

Pepi hesitated. "Well . . . actually just four. Your memories only go as far as the time your brain readings were taken, in 2006. You—lived—a year after that."

"So I kicked off in 2007. And this—whatever I am—is that persona the physiologists took so long to make, the electronic recreation of my functioning mind?"

"Jarl, we have a company psychologist who could probably put it

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in better words than I can. But I'm doing this because you know me, and we both felt that might make it easier for you. Frankly, we don't know just *what* you are! Instead of feeding the matrix patterns on the tapes into a computer, we imprinted them on the undeveloped brain of your grandson, Jarl the Second. Forcing a persona into an existing mind had been done experimentally, but only with persons dying of incurable diseases, congenital idiots, and so on. You're the first case of which we know where the imprint was performed on a direct linear descendant. It seems to have been an almost complete transfer; possibly because young Jarl's brain was virtually a blank slate."

"No, not quite," Jarl corrected. They were moving through the bright sunlight of a typical Florida spring day, over concrete sidewalks bordered with narrow flowerbeds. The side entrance into the towering south wall of Plant One was just ahead. "I'm sharing this brain with whatever was already there. I keep getting odd thoughts, little bits and pieces that make no sense. And I also get a lot of emotional feelings, things that don't seem to be expressed in words but are very real."

Pepi nodded. "It figures; a good deal of the original personality must have survived. We all have emotions, and the brain reading wasn't really designed to pick them up. I think the working mental processes are mostly yours, though, because those patterns in young Jarl were very weak and undeveloped. You'll be mostly Jarl Hentson the First while the imprinting . . . lasts."

The words jarred Jarl. Pepi swung abruptly to the right, on a walk that bordered the south side of the giant building. They passed a sharp-eyed guard, who gave Jarl an inquiring look. He was not wearing identification. Pepi flashed his own badge, which carried the red stripe of management across the top, and motioned for her to continue on her rounds.

"Pepi, I think you'd better explain that last remark *in detail*!"

"I will—but I wish to hell Hal was here to do it!" Pepi said unhappily.

"And just where *is* my wild-hair son?"

"Nobody knows. He was expected in this morning, but didn't show. I called Lily. She said he went out as usual last night for a poker game, and isn't back yet. She also said not to worry, that he often didn't return until Saturday or Sunday. Which might be true under normal circumstances, but not when we're trying to get a launch off tomorrow. I'm afraid something has happened to Hal."

"One problem at a time. First, what was that again about 'while the imprint lasts'?"

Pepi grinned. "Jarl, you seem about as clear-headed as the older

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man I remember. OK, then. When we pour a persona back into the computer and establish the matrices, they last as long as we keep power to them. But the power potential in the human brain is infinitesimally low by comparison. Theory predicts the imprint should start fading in about two weeks, be completely gone in three. This brain and body should return to what they were, unless there are residual changes brought on by the unusual cortical activity. There, I've said it! And I hope to God my common sense is better than the psychologist's professional opinion. He thinks you shouldn't be told."

They had reached the end of the building, and the sidewalk inside the fence that paralleled the highway. Pepi turned back toward the RI Tower. "Your breakfast should be there by now," he said conversationally. "How hard is all this hitting you?"

"Pretty strongly," Jarl admitted. "But I'll survive. OK, I'm an electronic persona imprinted on the brain of my grandson, who was born an idiot. I won't be here but two weeks as a fully functioning mind. And during that time I'm supposed to pilot one of RI's Big Birds—which you've obviously rigged for maximum velocity rather than high load capacity—and intercept this probe from some other civilization. This is a suicide mission for me, but if I succeed, Earth will capture our visitor. Is that the situation?"

"Precisely!" said Pepi, his voice low. He sounded worried.

"And I don't need to be told who dreamed this up," Jarl said grimly. "Only Wild-Hair Harold could think of anything so preposterous. How the hell has he kept RI from going broke since I made him president?"

"RI is doing very well. We're still by far the largest contractor in the space field. Better than half the Space Benefits budget goes to us every year." He saw Jarl's puzzled look, and added, "The old National Aeronautics and Space Administration went international and became the Space Benefits Agency two years after the US joined WorldGov."

Pepi saw Jarl's frown and shook his head, laughing. "Damn, there I go again! Knowing how much you hated WorldGov, it was suggested you not be told we really work for them now. Sorry, Jarl; maybe it *would* have been better for you to get this background from the psychologist."

"Pepi, there's so much I'm behind on. And I doubt I'll get caught up in two weeks. The world seems to be changing as fast as ever. Answer me one quick side question, though. That coalition of antitechnologists, environmentalists, and one-worlders who defeated me for reelection in 2004—are they still a potent force in the US?"

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"The one-world movement died away when the US and China joined WorldGov. There was nothing left to fight for. But the environmentalists are still here, and stronger than ever. Their green-belt program to preserve the Eastern woodlands is succeeding nicely. Some of the fringe elements operate outside the law, but most are legitimate."

The two strolling men had reached the front entrance of the Tower. They walked inside, past a gray-haired old man in a guard's uniform standing just inside the door, through the lobby and out the rear to the laboratory. Jarl's breakfast was waiting in his room.

Pepi was silent while Jarl ate. When he finished, Jarl pushed the tray away with a contented sigh. "Damn, I'd forgotten how good it is just to have an appetite and satisfy it. All my memories are of not caring any longer about food. This body makes a liar out of them."

Pepi nodded. "We expected a great many such conflicts, Jarl. But you seem to be overriding them very nicely. I think the imprinting, and hence your original personality, is strong because the brain is genetically very similar to your own. All three Hentsons could pass for fraternal triplets, allowing for different ages."

The two men separated for a few minutes while Jarl went into the bathroom and brushed his teeth. This was one of his peculiarities. The fact that he could not clean his teeth immediately after formal banquets had always bothered him. Pepi was waiting in the reception area when he finished.

"Jarl, one of the several reasons I wanted to talk with you was that we have some complications due to Hal's absence. Fred Buck—I'm sure you remember him—thinks we should get a signed permission form from you before lift-off. It will say something to the effect you are really the original Jarl Hentson, and fully in control of this body and mind. That you are voluntarily entering on a mission of which you understand the danger, and are doing so for the benefit of Mankind—blah, blah and et cetera. This is to protect Hal in case of later repercussions."

"I've got two weeks to be fully alive. Two weeks, and then I start fading back into nothingness. Hasn't it occurred to you—and to Wild-Hair, and the psychologist, and all the rest—that I may not *want* to spend that time dying on some impossible mission for the improbable good of Mankind?"

"Sure!" Pepi answered promptly. "But we expect you to accept *because* you won't be here but for two weeks—and because Hal is determined to go if you don't. We couldn't find an experienced astronaut who would volunteer."

"Hal? He couldn't handle a space rendezvous! He'd foul it up

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and kill himself besides. Where's the paper? I'll sign."

"The thought that you'd refuse was never taken seriously," Pepi said, rising. "And everyone agrees with you: Hal would be sacrificing his life for nothing. I'll get the form and the two witnesses."

Jarl watched him leave. And somewhere in the remote depths of the guts that fed the healthy body of Jarl Hentson the Second a tiny voice was crying, in a communication without words, *Oh let me live! I don't want to die!*

Jarl ignored the inner voice. His grandson's body was going to be sacrificed in the greatest adventure offered to a man since Armstrong and Aldrin walked on the Moon. With that it would have to be content.

Chapter 7

Saturday, June 11, 2011

"FRIENDS OF THE EARTH! Welcome to the rally! It's good to see so many of you still care what happens to this wrinkled old apple we live on."

Strobe was serving as warm-up speaker, using a hand-held amplifier. She walked back and forth on the small platform, facing the crowd gathering on the grass. To her back was the little round lake some wag had named Lorna Doone, the main attraction of this small park in downtown Orlando. Across Church Street to the east was Tinker Field, where a new and larger Tangerine Bowl had recently been completed.

"We called you down here this lovely Saturday afternoon because we may have a job to do!" Strobe's amplified voice rolled on. "I see people here from Daytona, from Melbourne, from Kissimmee, from Sanford. Know that you come in a good cause. Once again, our bodies may be needed on the firing line. Once again, we must be ready to do our share, make our contribution. And to tell you about that job, and what we may need of you, I'd like to introduce a very special guest. She came down from Boston just to be with us for this battle. Friends of the Earth, let me introduce a frequent contributor to the Bulletin, a member of the FOE national board of directors, and a fighter even more famous under another name—which we won't mention aloud. I give you Jodie Carson!"

Jodie rose from where she had been sitting in the front row and mounted the five steps to the platform. Strobe surrendered the amplifier and took a seat.

There was a polite burst of applause, which swiftly grew louder when word passed through the seated ranks that this was actually Sarcoma. Jodie held a finger over the mike button and waited, feeling her breath come faster. She was always nervous before a speech. The feeling faded rapidly once she started talking.

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"Friends, first let me thank you for showing up today. We had hoped you wouldn't be needed, that Rockets International would have the good sense to call off their mad plan of trying to capture the interstellar probe. But the latest word we have, as of about noon, is that the company officials in charge are still preparing to launch tomorrow. This in spite of the fact that Jesus Hentson is missing, and has been since last night. He seems to have . . . er . . . disappeared. At least he can't be found." Jodie waited for the implication to sink in, and joined in the heavy laugh that followed.

"Friends, we are still hoping it will not be necessary to take any action. Strange though it may seem, WorldGov, through its Space Benefits Agency, has for once made the right decision. Namely, that they will not attempt to interfere with the probe in any way, and will even obtain injunctions to prevent private parties from doing so." Jodie paused, but continued pacing back and forth on the narrow edge of the platform. She felt alive, vibrant with energy, strong and capable. She lived for these moments of high-voltage excitement, the response and support of a crowd. Only when she was actually leading a charge against some steel bastion of technology did life reach a higher peak, seem more fulfilling and worthwhile.

"What we are asking today is that you leave your name and visiphone number with our coordinating committee. The launch is set for 4:31 p.m. tomorrow. We will know before noon if they still intend to go through with it. If so, the word will go out to meet at the Riverside Park north of Titusville. We will have over a hundred boats, which will take most of us across the Indian River to Merritt Island. Then it's just a short walk across the sand to the launch site. We won't be able to get inside the pad fence and actually crawl up the rocket nozzles, as some have suggested"—she waited for the laugh to subside—"but that won't really be necessary. If they were to launch that giant vehicle with us jammed around the fence, I understand the concussion would kill us all. And I don't think even RI will have quite the nerve to wipe out a thousand of us!"

"You don't know Hal Hentson!" a voice called from the crowd.

Jodie lowered the amplifier and laughed. She raised it again to say, "I've met the Son-of-God-Hentson!" And in a low and confidential voice: *"Just call me Hal, folks, just call me Hal!"*

When the expected laugh died away Jodie went on, "You can call him anything, but just don't get in his way! Now I imagine some of you work for RI. You can't be fired for freely expressing your opinion in a protest, but your name could get on that confidential and

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highly illegal blacklist they maintain up in the RI Tower. So we're suggesting all RI employees wait at the beach, or in the boats. Don't go into the areas where you might be arrested. As for those of us who will be at the fence, we'll do the usual thing when they pull us away. Go peacefully, but walk back the instant the security guard lets go of you, if you can, and take up a new position. Remember, we only have to delay this one a half-hour and it's all over. And they can't haul that many of us away that fast!"

There was a small burst of applause. Most of these people had been arrested at one time or another. Jodie, looking over the crowd, was surprised to see how many middle-aged and even elderly persons were present. The Orlando chapter was an old one. The group that had originally saved the Everglades in the 1980's had broken up, but many members belonged to the new FOE. And some of these gray-haired retirees were the same dedicated young people who had fought that old battle to a successful finish.

Jodie lifted the amplifier again. "While the various area leaders are taking your names and visiphone numbers, we have a very fine group to perform for us. Thank you again for coming, and I hope I *won't* see most of you tomorrow, because there will be no need. Now here's our Orlando chairperson to introduce the entertainment."

Jodie surrendered the amplifier to a vigorous and ruddy-faced man who must have been approaching eighty years in age. Behind him, a group of four were setting up their instruments. Jodie nodded and smiled at several people who rushed up to shake hands, or remind her of past acquaintance. She gradually worked her way to the edge of the crowd, joking and chatting as she went, but never stopping. Strobe appeared by her side, then Cindy and Inez. They reached the sidewalk, and left the last of the FOE members behind as they hurried to Cindy's steamie.

"I think our second line of defense is in good shape," Jodie said with satisfaction as Cindy pulled out into the heavy Orlando traffic. She had a sudden thought, and laughed aloud. "You know, I wish we had a recorder going in the RI conference room right now! Without Jesus there to tell them what to do I'll bet the RI Big Pigs are having one hell of a hot fight!"

The other three joined in her laughter. When it died away, Cindy said, "I wonder which one of them had the nerve to keep the launch preparations moving?"

It had been Carson Jamison.

Carson was also presiding over the impromptu meeting he had called in his own conference room at Plant One. Pepi Asturio, Raoul

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Stone, Peter Dawson, Alonzo Swain and Fred Buck were present.

"Gentlemen, I somewhat hastily asked you here because I haven't heard a word from Hal since yesterday, and he can't be located. The preparations for the launch tomorrow are going smoothly, and Alonzo tells me we won't have any difficulty meeting our schedule. But the big question is—what do we do if Hal still isn't back by then? Has he made a definite decision to send young Jarl? If so, do we want to launch his son without him being there?"

Carson was being his usual cautious self, thought Pepi. He had received his orders, and even in Hal's absence had faithfully carried them out. But it had been momentum alone that had gotten him this far. Now that new decisions had to be made, Carson wanted others to share the responsibility.

"Carson, aren't you starting to worry prematurely?" Pepi asked. "We all know Hal has a habit of disappearing over weekends. Why not wait until tomorrow afternoon before making the final decision?"

"Because it's going to cost us a small fortune!" Carson nodded at his launch superintendent. "Alonzo tells me we have over two hundred people working today. It will take that many or more tomorrow for the launch. And I'm having to charge all this against administrative expenses. It's throwing my budget completely out of whack! If we call this thing off now and cancel the second shift coming in, we can save RI a hundred thousand dollars. Plus the thirty million represented by the vehicle."

"Plus get us back in the good graces of SBA. Plus make our contract requirements on deliveries of Big Birds. Plus maybe save RI from making a fool of itself as a corporation, and going out of business when SBA cancels all our contracts!" The speaker was Fred Buck, who up till then had been silent.

"But what if Hal *does* get back tomorrow, and finds we can't launch because you stopped the preparations?" Peter Dawson asked Carson.

"It would cost me my job," Carson said, his voice low. "I still think we should stop it—but I'm not willing to make that decision alone. That's why I asked you here."

"For your information, gentlemen, I've just had our attainable velocity calculations rechecked," Raoul Stone spoke up. "Based on the six o'clock data from Pete's boys at Goldstone, the probe is right on schedule. We can definitely intercept that fellow if we want to."

"And what happens if you *do* get next to it?" asked Alonzo Swain.

Raoul grinned. "Good question. Who the hell can say? The probability analysis worked up by Wundt's bright people says the

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probe won't be armed. But they think like you and me, no matter what ratings they took in physics. The people who built that thing may not."

"Carson, if you called us here because you want our opinions, I'll give you mine," Pepi said into a brief silence. "I think we should proceed full-speed-ahead on the preparations, and not make the final decision until just before launch tomorrow. If we still haven't found Hal by then—and I'm very much afraid something has happened to him, and am going to ask Lily to file a missing-person report—we can always stop it at the last minute. That will save the major expense, the vehicle itself. But if we cost RI the chance to capture that probe just to save a hundred thousand—well, I don't think Hal would forgive us for that. I strongly urge we continue the project just as he laid it out for us; at least up to launch time."

"I concur," said Peter Dawson immediately.

"That certainly sounds like the safe and sensible thing to do," said Carson, sounding relieved. "Does anyone disagree with that assessment, or have a different recommendation?"

"I think it will be an exercise in futility," said Fred Buck. "SBA is going to serve that injunction on us, and I will strongly advise RI not to defy it. But we can go ahead at present, yes."

"Before we break up—Pepi, how's young Jarl?" asked Carson. "I've thought all along this was the weakest part of Hal's plan. Do you really think a retarded boy like young Jarl could have learned enough from your treatment to be a better astronaut than a plane pilot?"

The way the question was phrased indicated Carson did not understand what had been done with Jarl the Second's brain. "Carson, the imprinting has been successful beyond our highest expectations. For the next two weeks that's really old Jarl Hentson back with us, and as ornery as ever. Jarl is certainly capable of maneuvering the craft through the contact routine. The tough part will be getting inside and shutting off the probe's engines. And we won't know what Jarl, or anyone else, can do in that area until we try."

"But it's still a suicide mission," pointed out Peter Dawson. "We'll have to turn off the life-support, to keep Jarl from frying alive when he passes around the Sun."

There was a brief silence. Then someone softly said, "*Jesus!*"

Harold had slept late, and been awakened at noon for a sandwich and some hot coffee. It was quiet in the small bedroom. He tried to read after eating, but dozed off again. And then faint sounds of music reached him, and he shook himself awake and crossed to the

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shielded door. With one ear against the panel he could hear both male and female voices. Some of their friends had brought his captors a stereo, and they were playing it—loudly.

Which gave Harold an idea.

He walked into the bathroom and carefully examined the area where the window had been boarded over. With a set of carpenter's tools it would be possible to rip off the acoustic paneling . . . but there was no telling what lay underneath. And outside was a six-floor drop to the sand of Cocoa Beach.

Still, this seemed his best chance. Opening that locked door to the living room, and overpowering alert guards, was virtually impossible. What he needed was a good crowbar . . .

Harold walked back into the bedroom. There was only the bed, the television set, the chair, the table, and the dresser. The chair was a reasonably modern air-bag inflatable, but the other furniture was very old.

Harold stepped to the bed and lifted the coverlet. He was staring at a metal rail that ran the full length of the bed, its ends fitted into slots in both footboard and headboard.

Harold felt his breath come faster. He started to yank the rail out of the footboard, then changed his mind and hurried around to the side next to the wall. After a moment of beating down on the footboard with the palm of his hand, he managed to free the rail. The front end was more difficult because he had to support the mattress and springs, but he finally freed it also.

That side of the bed fell to the floor. Harold was holding a piece of thin metal angle iron longer than himself. From each end double attaching hooks protruded, fastened to shorter pieces of angle iron riveted at a ninety-degree angle to the length.

Though the rail was too long and awkward, it was still a fair crowbar. Harold lowered one end to the floor, placed a foot in the center, and bent the rail until the two ends were less than a meter apart.

Now each end could serve equally well. Better and better. Harold thought a moment, then turned on the television. He found a station playing mostly canned music over a silent newscast, and turned the volume on loud. Then he went inside the bathroom and closed and locked the door.

Picking a spot where two tiles joined, Harold worked an edge of the angle iron underneath one side. Then he pulled, hesitated when the steel started to bend, shifted position, and pulled again.

A nail creaked and moved. Very slowly Harold started working the thin metal down the length of the tile. The next nail screeched and almost popped out.

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It was awkward, clumsy labor. Sweat popped out on his forehead. Some nails did not want to pull free, and had to be pried at again and again. But little by little he was stripping off the concealing layer of tile.

Harold glanced at his watch, and saw to his surprise it was almost six o'clock. They would be bringing his dinner in at any minute.

Unlocking the bathroom door, Harold hurried back into the bedroom. The first thing he saw was the mattress and springs, lying with one side to the floor. Hastily he gathered up the several books they had thoughtfully provided him, and stacked them under the springs. By turning the last three upright he managed to raise the bedding high enough to seem normal. Pushed back against the wall, it would pass.

Returning to the bathroom, Harold bathed his face and hands. He had barely seated himself in the chair and started watching TV when the door opened and Jodie entered, carrying a tray of food.

"How's the prisoner of humanity?" Jodie asked, setting his food on the bedside table.

"Starving," Harold replied, getting hastily to his feet. "Here, you take the chair and let me eat." She had started to sit on the edge of the bed. He turned off the TV as he went by. Harold noticed Jodie watched him carefully as they passed within a meter of each other.

Harold seated himself carefully, trying not to be obvious about it. She was alert for trickery—but of the wrong kind.

The hard work had given Harold a real appetite. He ate hurriedly, as Jodie idly watched. This time he had a full takeout dinner. When the last scrap was gone she said, "One more day and you can go home. By this time tomorrow there'll be nothing you can do."

"I can try to put you and your gang in jail."

"None of us have used any names except special ones known just to each other. You'll never find us. I'm the only one with a record, and it's only as Sarcoma. If we thought you really *could* identify us I'd be arranging now to have you shot."

"Would you really? Are you so convinced of the righteousness of your cause you'd even kill for it?"

"I've never killed anyone, but I would if it were necessary. For people like you, there's a special little group that does that kind of execution, some sky-high types who enjoy it. They aren't members of my organization, and we ask them for help only when nothing else will win the battle. And as for the morality of killing, which seems to horrify you—have you ever thought of the millions you and all the other Big Pigs like you are quietly killing every year?"

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"N-o-o," said Harold slowly. "In fact I wasn't aware I was killing anyone."

"That's because you and the rest of the so-called leaders of the world don't see the consequences of your actions. If a new baby dies in Algeria because it needs a blood exchange at birth, you don't accept blame for the fact there's no hospital available. If a middle-aged man in Brasilia dies of a heart attack because he lives on a high-starch diet of corn and bread, you don't blame yourself for the fact he had no protein. But the billions the US and then WorldGov have wasted developing big rockets and assembling that useless space station would have built a thousand hospitals, and provided meat to millions of hungry people. But you don't *see* them! They live their miserable lives, they die their miserable deaths—and you and all the rest of the Big Pigs live fat and happy at the world's expense! That's why I hate your kind, *Jesus* Hentson! You kill every day—and you don't even know it!"

For the first time since Harold had met this strange woman she seemed to have gotten genuinely emotional. There was a wet shine in her eyes, and high color in her face. She was even breathing deeply, as though in the grip of some compelling passion.

A sudden insight dawned, and Harold started to speak. He choked it off. This woman was one of those people who always failed in person-to-person relationships, who had no true friends and few close acquaintances. They really didn't like other people at all, but hid this from themselves by proclaiming their love for humanity as a whole. In short, this was one of the basic personality traits of most of the world's leaders!

"When you die you want it to be gloriously, in a mighty battle for something you believe in," Harold said softly.

Jodie looked startled. "That's very astute," she admitted. "I don't know how it relates, but—it's true I can't see myself dying in bed of old age . . . OK, you reached me. But you hit me on a personal basis, on what I, Sarcoma, am." He noted with interest that she thought of herself as the glamorous outlaw Sarcoma—not Jodie. "Now get back to basics. Do you deny that the space program deprives poor people of a better chance for a decent life here on Earth?"

"Yes, I certainly do! The space program is the cutting edge of new technology, and has been now for fifty years! Those hospitals you mentioned have hundreds of new tools and techniques, from body sensors to cryogenic scalpels, developed first for space applications. That hungry old man has his crops guarded by satellites that warn his government immediately if a blight appears, or even if his crops get too dry and start dying." Harold

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paused, studying Jodie's face. It was still filled with lurking fire. "Look, we could argue all day and not get anywhere. Why don't you shed your clothes and hop into this bed, and we'll settle this man-to-woman."

"My God! You're really cruddy-crude!"

Harold gave her a mocking grin.

"Oh I see," Jodie said, her voice very quiet. "You think I'm a lez, and you can hurt me by saying that. Sorry to disappoint you, *Jesus*. I'm hetero—despite the fact you find me with Strobe and Slippers. But I'm particular who I share it with—and you'll never make the grade!"

Jodie rose and walked out.

Which was what Harold wanted. He had to get back to work on that window.

Chapter 8

Saturday, June 11, 2011

Harold relaxed, for the first time since Jodie entered the room. For a moment he had thought he misjudged her, that she was about to accept his dare—which would have brought down the bed, and his own fragile chance of escape.

Nor had he really thought she was a lesbian. But the coarseness of his proposal had been an effective way of getting her to leave.

He turned the TV back on, locked the bathroom door, and resumed prying on the slowly yielding tiles. Already he could see the ends of two of the boards that had been nailed across the window.

It was midnight by the time he had access to the ends of three of the boards. They were of much heavier stock than the tile, and the nails more deeply driven. But whoever had done this work had been a poor carpenter. He had cut the boards so short that barely three centimeters extended past the nail-heads. By hammering gently with the edge of one of the attaching hooks on the rail, he managed to split one board end down to the nail. After that he widened and deepened the crack, and eventually worked one edge of the board up past the nail.

Harold ripped a long section loose with his bare hands.

With room to get the whole end of the bar between two boards and pry, the rest was easy.

There was no time to loosen the board ends still under tile on the opposite side. Instead, Harold pulled the two free bottom ends down and a third one up, until he had room to crawl through. He found the small lever that operated the window and opened it. After that he had only to punch his way through a fragile plastic screen.

With his head and shoulders through the hole, Harold looked around. He was facing the ocean, a hundred meters away—and it was some twenty meters straight down to the sand. He looked to the right—and there was the edge of a

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balcony that opened off the living room, as so many of the ocean-side apartments did. He could hear the loud music through the glass sliding doors, much better than through his sealed bedroom door.

The balcony was vacant, and heavy curtains concealed the interior of the living room. If he could reach it, and do so quietly . . .

Harold moved back inside a little, braced one foot on the sill, and heaved out on the metal frame enclosing the glass. The catches broke with a loud shriek of tortured metal, and the whole pane swung upward. He sat on the sill, tilted his body far to the left while holding on with his right hand—and just missed grasping the bottom rail of the balcony.

Holding the edge of the window with both hands, Harold moved his buttocks out several centimeters—so far he would be immediately overbalanced if he let go. And then he released his grip and twisted his body hard to the left, before he had time to think, to hesitate . . . and both hands closed around the rail at the end of his swing.

Harold paused, breathing deeply of the warm air, feeling the sweat running wetly down his neck and chest. Then he transferred his grip to a vertical post and worked his way up hand over hand. Swinging his feet off the windowsill, he clawed for a foothold on the bottom of the balcony. He found it, and eased himself over the top rail, to collapse in a heap on the floor. Harold felt as if he had just conquered Mount Everest.

When the trembling in his muscles eased, Harold dragged himself to his feet. Jodie had been right; he *was* an office slug. The exercises he did at the health spa were not actually keeping him in good condition. At least that unusual feeling of fear and anxiety had vanished. Despite his physical fatigue, Harold felt his normal confidence in himself return. Now if he could just get off this balcony . . .

There was no way to reach the balcony above. With a sigh of resignation Harold crawled over the balustrade on the outer side, let himself down until he was hanging by his hands, and started swinging his legs. He was startled to find his grip slowly slipping, that his strength was inadequate to hold him there. On the next swing in he had to let go, and plummeted down just inside the lower balcony railing. He landed in a heap, and could not move.

There was a stir inside the lighted living room, someone coming toward the glass doors where the curtains were thrown wide to the night. A man peered out at Harold, and hastily retreated. He came back with a pistol.

Harold raised both hands in abject surrender. "Please! I'm not a burglar! I just escaped from upstairs. Some nuts up there, they were holding me—" He stopped,

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knowing he sounded incoherent. "Wait. I'm not drunk or crazy. Will you call the police for me? You can hold me here until they arrive. Will you do that?"

The man, an elderly black with a few tufts of white hair and a deeply wrinkled face, looked puzzled. But he finally motioned for Harold to enter, and lowered the pistol. "Mister, I don't know who you are, or what's going on, but calling the police is one thing I *will* do! Now you just come inside and sit quietly till they come."

Harold had never been so glad to obey a command in his life.

What he was surprised to discover, when the police finally arrived, was that they had no desire to go upstairs and summarily arrest the antitechs who had been holding him. They pointed out that they had no search warrant, and no proof beyond his word. When he finally convinced them, and led the way upstairs, the officer's knock went unanswered. The room was now totally silent, and no light shone beneath the door.

When the manager was awakened and let the police in, Harold at least had the satisfaction of showing them the sound-proofed bedroom and bath, and the gaping hole through which he had escaped. And, finally, they accepted his word he was Harold Hentson, despite the fact he could offer no identification to prove it, and was still wearing his wig. Since the kidnappers had already gone, they even agreed to let him fill out the reports on Monday, and released him.

Harold caught an air taxi home in the pale light of early morning.

Lily had been called by the police. She was up and nervously pacing the floor when Harold walked in. "Hal, what in the *world*! Pepi called and tried to get me to call the police, but I felt—you know, that it might be embarrassing if they found you. I tried to tell him I was sure you were all right. And you were actually *kidnapped*? But there was no call for ransom or anything! I don't understand . . ."

"I'll explain it all later," Harold said firmly. "Did Pepi say how the launch preps were coming? Are we OK for this afternoon?"

"He mentioned going ahead just as if you were there. But he also said something I didn't understand, about Jarl being 'fully in control.' Hal—are you sure our son is all right?"

"He's fine," Harold assured her. "Now I've got to get some sleep, or collapse. Pepi should be sleeping at the lab . . ." Hal called the plant, and had the night switchboard operator put him through to the lab. Pepi was there. After he shook himself awake, Harold explained what had happened—leaving out his second identity—and asked for the present status.

"Everything's going very well,

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Hal. We took Jarl off medication and let the imprinted mind take full charge. He's sleeping naturally now. Jamison called a meeting this afternoon—yesterday afternoon, now—and agreed to push ahead just as if we were going to launch. But Fred Buck still says that injunction will be served, and we'll never get the Bird off the ground."

"I'll worry about that later. Listen, Pepi, relay some instructions for me. The group of antitechs who held me have something else planned, just in case RI decided to go ahead with the launch. I want our security force beefed up. Call the guard captain and tell him I said to put on double shifts all over Merritt Island. Put all three helicars in the air, and the two light planes. Place a heavy guard around Jarl. Close off the northern beaches if that hasn't been done, just in case some nut tries to get in there with a rifle. And clear the area of boats, both in the rivers and offshore. Tell the shift captain to be ready for anything."

"I'll get the security chief out of bed and let him do it," said Pepi. "And I'll call Jamison after breakfast and tell him you're back. When do you expect to get here?"

"Let me sleep four hours . . . by noon at the latest. Call Jamison right now; he should be at the plant anyway. Tell him that Bird lifts off on schedule or it's his head."

"Gotcha!" Pepi said, with a broad smile on his round face. "Go to sleep; I always wanted to run Rockets International for a few hours anyway."

"It's yours," Harold assured him, and punched off.

He did manage to brush his teeth before he collapsed, unbathed, into bed. He could not stand having his teeth feel coated.

Sunday, June 12, 2011

"How in living hell did he get

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away!" Jodie demanded angrily. "Why didn't you hear him?"

Sergio looked uncomfortable. "Well, we had the rooms soundproofed, you know, so no one could hear our guest yelling. And Inez and Tanya brought over some records and a stereo, and we had a little party, you know—but Slippers stayed off the hi-lifters and so did I! It was just the noise that kept us from hearing him work on that bathroom window."

"That was the third time we've used that place," Strobe added. "But Jesus was the first person we let walk in, and who knew where it was. We were going to have to move anyway."

"That isn't the point!" snapped Jodie. "We needed to keep him there until tonight! Now we'll have to go through with demonstrating on the island, which puts a lot of people to work unnecessarily."

"Nah, most of 'em will enjoy a Sunday march," Strobe said cheerfully. "I've just got to call the squad leaders and tell 'em it's on." She walked to her visiphone and started punching buttons.

"Sarcoma, I brought someone who has some interesting news," Cindy Holcomb spoke up. They were sitting in Strobe's small living room, holding a hastily-called war conference. "This is Bob Brown, the therapist for Jarl Hentson the Second. Tell her, Bob."

"Well, I don't like to talk about the Hentson family"—the way he said it made it obvious Robert enjoyed nothing more—"but Hal has finally pulled a real raw one. He told Lily—Mrs. Hentson—that he wasn't going to do anything that could hurt young Jarl. But Inez and Cindy tell me he's supposed to be on that rocket, and it's a one-way trip. Now Lily doesn't have much backbone—but if she knew *that* she'd try to stop him!"

"Then go back and tell her! Maybe she'll join us at the fence. Jesus can burn her too when he launches the thing."

"She'll just call the sheriff," said Robert. "Lily almost never leaves the apartment."

Jodie gave him a cold stare. "Why don't you get on back and tell her anyway?"

Robert got up and hastily left.

"How many boats do we have on call, and of what capacity?" Jodie demanded of Sanderson.

"We have 105 confirmed, and four probables," the bearded engineer responded. "Most of them are small, but we can crowd in eight or ten people for a short trip."

"Good. The next item to check on is that injunction. Can you call that member who said he was a lawyer, ask him to contact any clerks he knows in the Federal judge's office, see if the order has been written?"

Inez volunteered, and left for her own apartment two floors up. Strobe was still busy calling FOE squad leaders around the central

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Florida area. She was getting through to most, and the responses were uniformly good. Her contention that most members would enjoy a Sunday march was being confirmed.

In a quiet moment Jodie wondered how many members of FOE, and most of the other organized groups, participated out of a sense of boredom. It was certainly true she had gotten started that way, twelve years ago in college. Finishing the last two years had been difficult, and she hadn't even considered going on for an advanced degree. Working in FOE, and two local college pressure groups, was far more interesting—and usually exciting. Most students struggled on because they had to face the necessity of supporting themselves. At least the Karlson millions had insulated her from that. And as long as Daddy didn't know about the Sarcoma identity, her allowance would stay adequate. She was an only child, and her mother had died while she was a baby. Her father professed an amused tolerance when she chose to work in the low-paying field of Alternative Journalism. He would not have tolerated the illegal activities of her second alter ego.

Inez returned in a few minutes with the news the injunction had been issued, and was on its way to Merritt Island in the hands of a Federal marshal. She also had some info not on the official paper—that it was not to be served until a half-hour before the launch. That would make it virtually impossible for RI to reach a higher judge and get the order canceled in time—even if they could find one willing to act.

"Do you still think it's necessary to invade the island?" Inez asked. "Even Jesus Hentson isn't going to risk a jail sentence for contempt."

"We've already got the march in motion," Jodie pointed out. "And we'd better keep them coming, just in case Jesus is even crazier than we think." She didn't add that calling it off now would not only spoil the fun of those who looked on this as a lark, but antagonize the serious ones who deeply believed in the antitech cause. It would also reflect badly on her judgment as a leader.

They were due to meet in the park at one o'clock, and it was already past eleven. Jodie went into the kitchen and made herself a sandwich. Strobe was still on the visiphone, and various FOE members were wandering in and out. Jodie went to her bedroom and dressed in a scarlet pantsuit, with a matching red wig, eyebrows, and eyelashes. She painted her lips a bright vermillion, rouged her cheeks heavily, and slipped on blood-red boots. It was time for Sarcoma to appear.

She felt the first gathering tingle of excitement, of joyful anticipation. Before she took off this wig

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again some male member of the local group was going to receive a pleasant surprise, a night to remember. He was going to make love with the legendary Sarcoma. That was the way she always ended an appearance, and there had been several over the past few years. Tomorrow it would be a black-haired Jodie Carson who caught the Coastal Shuttle back to Boston.

But who would the lover be? None of the men she had closely associated with here appealed to her. Sergio and Bill were young and sloppy. Slippers had other inclinations.

Strange; she had met exactly one man who definitely moved her. She could understand why Diana Sharp had set herself up as a trophy for Jesus Hentson. Big Pig though he might be, at least he was a man of force and character. It was too bad he was on the opposite side—in fact, the leader of it.

She could probably find someone in the crowd this afternoon.

Chapter 9

Sunday, June 12, 2011

"We're ready to go, Jarl," said Pepi.

Jarl patted his stomach—he had just finished a lunch three times the size he could remember eating as an older man—and rose from the table. He had awakened on this final morning with his mind almost clear, and for the first time had been allowed to walk to the simulator for the morning's practice run. Now it seemed very much as if he were simply young again, except that he had the experience of a full life to draw on. Fifty-six years of accumulated knowledge, and the body of a healthy young adult . . . he was no longer being bothered by that internal feeling of disturbed emotion, the odd and inappropriate upwellings that had difficulty expressing themselves in words. He seemed very much his old self.

No, strike that. A new young self. The gift of youth restored, except that it was temporary, would last two weeks . . . and somehow that did not seem fair. Such a short time to live . . .

Jarl followed Pepi out of the rear door of the lab and into a small aircar. It lifted off immediately for the launch site. There would be no dignitaries waiting to wave when he emerged from the suiting room, no huge crowd backed a safe five kilometers from the rocket. The Mars trip had been an unusual occurrence. Regular spaceflights had long been routine operations, which was the way Jarl preferred it. A Space Shuttle lifted off twice a week, to launch or service the various orbiting spacecraft, and a Big Bird with a huge section of the slowly growing Space Station roared skyward every month.

The Space Station had been his own idea, and he had rammed the initial planning money through Congress during his term. He had

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intended it to be a US venture. But after he left office the project had languished, Pepi had told him. It was only now coming to fruition, after Space Benefits had become a WorldGov agency.

Pepi had also told Jarl the political opposition had been intense, especially from the developing nations. They wanted all possible resources plowed into their own countries. The US and Russia—and strangely enough, China—had bulldozed the final authorization through the WorldGov Council.

Come to think of it, the Space Station authorization had been one of the main points raised against him in the 2004 election. The antitechs had exploited that one to the hilt, claiming it was useless and only an excuse to funnel Government money to Rockets International. That he had given away every dime of RI stock had not influenced them. The "gift" had been to his son—and most people would not accept it as genuine.

But it was. He had had no intention of returning to RI, much though he loved the company he had reorganized and built into a giant. The stock gift to Harold was irrevocable. And his son seldom asked his opinion after assuming the presidency. In fact, they had gotten into minor conflicts a few times while Jarl was in office.

It was interesting to note the need for the Space Station had finally become obvious enough to convince even the sluggish WorldGov Council. NASA and RI had completed several pilot projects, demonstrating the economic feasibility of manufacturing everything from semipermeable membranes to vaccines in zero G. It must have been the dollars-and-cents figures on the reduced costs of producing perfect metal spheres for the hollow ball bearings that rolled in half the world's machines, or the casting of optically perfect lenses for telescopes and microscopes, that finally convinced them.

That same group of shortsighted nations had fought the establishment of an observatory on the back of the Moon. But the astronomers and their university backers had been too powerful, worldwide. MoonEye had been built—and already had seen further into the depths of the universe than any ground-based reflector possibly could.

The aircar sat down on the roof of the old Vehicle Assembly Building. It was used primarily to assemble and check out the Space Shuttles. Pepi and two watchful security guards led Jarl inside, down the open-faced elevator to the fourteenth floor, and into the astronaut suiting room. Two RI technicians were on hand to help him into the spacesuit, and check it out.

It felt good to be back in harness, to be grasping the portable oxygen bottle that would supply his air for the next two hours, to again

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be—an astronaut. Looking back from a unique perspective, Jarl almost chuckled aloud. How many people would think he was a nut to prefer the restricted life of a rocket jockey to the power and prestige accorded a United States President? Or even the president of Rockets International?

Jarl could say quite honestly he was more proud of being the first man to set foot on Mars than having held either position.

"Time to go, Jarl," said Pepi, reappearing by his side.

It was two o'clock. Now came the part he liked least, waiting on his back for two hours while the rocket and pilot's module underwent their final checks and tank-topping. But every job had its dull side.

The two security guards rejoined them when they emerged from the suiting room. Pepi led the way toward the elevator—and Lily Hentson came around the next corner and directly toward them, a man wearing a sheriff's badge following her.

"Jarl! What are you doing in that crazy suit! Stop this right now! Pepi Asturio, I don't know what you think you're doing, but you are *not* sending my son on any spaceflight! Sheriff—arrest him!"

The two security guards came to alert attention, looking curiously at Pepi. Lily hurried toward them, the unhappy-looking deputy sheriff in tow. "Cut off the oxygen and undo my helmet," Jarl said to the technician who had accompanied them.

"Not here, sir. Back in the suiting room, if that's what you want."

"Put a face mask on her and the deputy and let them in," ordered Jarl as he retreated inside, leaving Pepi to face the angry woman.

"Just a minute, Lily. I'm following Hal's directions, as I'm sure you know," Pepi began. "Where is he? If there's going to be any change in plans he has to OK it."

"No, he doesn't! This is my son as well as his! Mine more, because I've devoted my life to him. If you don't turn him over to me, and at once, I'll charge you with kidnapping! And I'll settle with Hal later. Right now I want my son!"

Pepi had never seen Lily Brewster Hentson so worked up before. She had always seemed a curious nonentity, a withdrawn and uncommunicative woman, devoted to her child and husband. In her own quiet way she had always been pleasant to him, and he got along well with her.

"Uhh . . . I think you'd better do as she says, sir," the deputy joined in. "I understand that boy's retarded. If he isn't responsible for his own actions, and his father isn't here, then you're going to have to do what his mother asks."

"No way, mister," said Pepi simply.

The deputy's face flushed to a dark red. His hand rather obviously moved toward his pistol. "Now I'm

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telling you, mister, RI Big Pig or not—nobody's taking that retarded child out of here while his mother's standing there saying you can't do it! Now you just better turn him over to us, and right now, or there's going to be trouble."

"Hal is supposed to be on his way here," Pepi said to one of the security guards. "Put in a call to dispatch and see if he can be located. Have them tell him it's an emergency. We're going to wait here." He turned back to the deputy. "We won't turn Jarl over to you, but we *will* wait until his father arrives. Lily, you may as well know. That isn't really your son now. It's your father-in-law, for all practical purposes. And you know damn well you aren't going to take the first Jarl Hentson anywhere he doesn't want to go."

"That—that crazy imprinting thing? Nonsense, Pepi! That's still my child. If you've messed up his mind that's something we'll settle later. Right now I just want him out of that spacesuit and back home."

The suiting room door opened and a technician emerged. "Mrs. Hentson, if you and the deputy will put on these face masks, you can come in and talk with . . . ah, Mr. Hentson."

Lily gave him a puzzled look. No one "talked" with her son. But she moved forward and took the mask, and the deputy followed.

Jarl had his helmet off. He refused to take the mask the technician offered; his face needed to be visible.

"Hello, Lily," Jarl said aloud. "you're looking well."

There was a moment of stunned silence. Lily almost visibly faltered, one hand going to her hidden face. "Jarl! How did you—did you . . ."

"Learn to talk? It would be very difficult to explain, Lily. Why don't you just accept that I'm really the first Jarl, not the son you knew. And I *am* going on board that rocket. I'm sorry, but too much depends on it—in ways you couldn't begin to understand."

"Mrs. Hentson, he doesn't sound retarded to me!" the deputy broke in. He sounded puzzled. That Harold Hentson's son was a mental defective was common knowledge in the area.

"But it's still my son's body!" Lily cried. "And this is a dangerous mission! You have no right to risk my son's body, I don't care what's in his mind!"

"Lily, I'm over eighteen years old," Jarl said. "Unless you have some court authority appointing you my legal guardian, I am a free adult. Do you have such—and if so, is it with you?"

Lily looked confused. "Well of course there's paperwork! But Hal has it. He takes care of everything like that. Where is he? I thought he was coming here!"

The second security guard had returned, and was waiting for a

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chance to speak. "Hal is on his way, Mrs. Hentson."

Lily pulled the tattered shreds of her dignity around her and said, "Then we will wait." She seated herself in the only available chair. The deputy sheriff, looking extremely uncomfortable, remained standing, breathing heavily through the face mask.

It was ten minutes before Harold arrived. He had been conferring with Fred Buck on the best way to handle the expected injunction. Lily almost leaped to her feet, shouting, "Hal, you lied to me!"

Harold crossed the room to the distraught woman, taking her hands in his. "Yes, I did, Lily. I didn't want you to worry. I'm sorry someone told you—but this mission is too important to stop. Jarl is going."

"Oh! Oh, I never could argue with you or your father!" And Lily collapsed into helpless tears, tearing the cloth off her face and flinging it to the floor.

Jodie glanced down the length of the rotting old Riverside Park dock. A motley swarm of jet boats, cabin cruisers, launches—even some airboats and motorized sailboats—were tied up at every available point. Others waited offshore. This park on the Indian River, just north of Titusville, was a state facility, and popular with local residents. FOE would have to pressure Florida into better maintenance.

As each boat filled with passengers it pulled away from the dock, making room for those waiting. Jodie glanced at her watch. The loading would be completed by three o'clock. Slippers, who owned one of the cabin cruisers, had assured her they could cross the river and walk to the launch pad in an hour. There was only one facility for the single-engine, giant weight lifter called the Big Bird, fronting the sea on the north tip of Merritt Island. They could get to within a few hundred meters by boat.

The antitech message center—consisting of three runners and a FOE member who had taken possession of the park's single public visiphone—had just sent word from Robert Brown that Lily Hentson had failed to reclaim Jarl. No one knew where the Federal marshal was, or when he planned to serve the injunction. It looked as if their bodies, the ultimate weapon that had served them so well in the past, would be the determining factor again. Now she felt vindicated in having organized the march.

"Sarcoma, the security guards across the river have noticed the unusual activity here, and are keeping an eye on us," a volunteer runner reported. "And all the extra guards who were manning the roads to the south are being shifted north."

"There won't be enough of 'em," Jodie assured the young girl, who sounded frightened. "Just remem-

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ber; go limp, make them carry you away—and run back as soon as they release you. They couldn't possibly have enough handcuffs or vans to hold half of us."

The girl nodded, and sped away to get on one of the last boats. Jodie checked the park for stragglers, waved to the girl at the visiphone and the young man with a fast boat who would wait with her, and walked to Slippers' cruiser. She was the last to board. Several people she did not know called greetings, and she nodded and smiled as she hurried up the ladder to the flying bridge. Slippers and Inez were in the two seats. The husky young woman hastily rose and offered her chair to Jodie.

"Run up the flag and let's move out," Jodie ordered. Slippers nodded to someone standing by the short mast. As they backed away from the dock the bright red circle of the Friends of the Earth went fluttering up, the FOE symbol prominent in black in the center.

A ragged cheer burst from the surrounding boats. Jodie stood up—the top canopy was down and the sun mercilessly bright and hot—and waved to the waiting people. Slippers eased them into open water, at idling speed, then gradually stepped up the pace. To avoid each other's wakes the following boats spread out in a vast half-circle. The awkward armada began moving across the six kilometers of open water to the island's northeast tip.

Slippers had a pair of field glasses lying by the wheel. Jodie took them out of the case and turned toward Merritt Island. The towering bulk of the Assembly Building leaped into focus, far to the south. From this angle the attached Launch Control Center was hidden behind it, but she knew Jesus Hentson must be there, probably just getting the word they were about to be invaded. *And how are you going to stop this, Big Pig?* she asked silently over the distance that separated them.

Harold was too busy to listen for telepathic messages. He had a major problem on his hands.

"Mr. Hentson, your guards tried to stop me at the gate," the paunchy, brown-faced man with the prominently displayed badge of a Federal marshal said with controlled anger. "They paid no attention to the writ-of-entry I have here from Judge Goodall. My associates placed them under arrest—after a little argument. Your front gate isn't being guarded now."

"Yes it is, Mr. McDougal. The security chief sent two people to replace them," Harold answered. They were standing in a glassed-in observation room of the Launch Control Center, where one of the four old firing rooms had been converted to handle the Big Bird vehicle. He did not add that the guards had tried to stop the marshal on his express orders, and with

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the assurance RI would be responsible for any legal difficulties their actions caused them.

"Well, I'm going to file charges against them for obstructing the legal work of a Federal law officer." McDougal reached into his jacket pocket—he wore an old-fashioned suit despite the heat of the day—and produced a folded paper. "This is an injunction, signed by Judge Goodall, forbidding you to launch a rocket or make any other attempt to interfere with that interstellar probe thing that's due to go by the Earth tonight. It is my duty to warn you that any violation of this order will result in the issuance of a bench warrant for your arrest. And I'm sure you know Judge Goodall doesn't look kindly on anyone brought before his court for contempt."

Harold accepted the injunction and gave it to Fred Buck, who was standing by him. "OK, Marshal, you've done your duty. I've accepted the injunction, and it's in effect. Now why don't you get back to Orlando and enjoy your Sunday afternoon."

The marshal looked surprised. "Go back? No sir, I'll be waiting right here. If that rocket goes off, the judge will want to know how many of you he has to put in jail. That order applies to Rockets International as a whole, not just you."

Harold shrugged. "In that case, have a seat and watch. Just don't try to interfere with our work—or you'll need the whole US Internal Peace Force to keep you from being thrown out of here!"

McDougal stiffened. "If I need the Peace Force, Mr. Hentson, I can get it! And I will."

"Sit down," said Harold wearily, and walked away.

"Hal, I hope you appreciate just how serious this is," Fred Buck said in a low voice as he followed. "You, the technicians here, young Jarl—you can all be jailed for years if that judge finds you in contempt!"

"Even a contempt citation can be appealed. We'll take him to a higher court."

"Yes, it can be appealed, but I'll tell you now it would do no good. Judges are notorious at sticking together on matters pertaining to their authority. And the Supreme Court would never agree to review the case. My professional advice—and my urging as a friend, Hal—is to stop the launch."

"I hear you, Fred; thanks." Harold walked down into the firing room proper, and stopped by the security console. "What's the latest on that fleet of boats heading this way?"

"The aircars report it's a large group of pleasure boats, Hal," the shift security chief responded. "The leader is flying a round red flag, the symbol of the Friends of the Earth. They seem to be headed northeast at about eight knots,

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which will get them to the pad in just a few minutes."

"Is there any way to stop them?"

The security woman shrugged. "Our pilots are armed with pistols and rifles. There's no way we could sink a boat, or even disable one without probably killing people. And I don't think you want that."

"No, I don't. What about after they land? Do we have enough guards to keep them a safe distance away from the pad?"

"I've called in every person I can possibly spare from the south end. We have over a hundred guards gathering on the shore, and about thirty assorted vehicles. The only way to stop them is to arrest for trespassing and haul 'em away. I doubt we can get the area cleared before the launch. In fact I *know* we can't."

"Rush some more vehicles up there. Call out the firemen. Tell them to bring every truck, including the hovertanks. When the demonstrators wade to shore, take them into custody, carry them at least ten klicks from the pad, and send the vehicle back for more. Skip the usual arrest procedures."

"OK, Hal; but it won't be enough."

"Tell the guards to work as fast as possible. I'm told there won't be any resistance if the FOE people follow their usual tactics. Just haul them away and get back for another load."

Harold glanced at the huge wall clock; it was nearing four o'clock. Barely half an hour to go. The security chief was right. Jodie/Sarcoma and her friends had planned well.

A sudden thought occurred to Harold. There was a possibility the invading army had overlooked. He hurried to the console of the launch conductor and demanded, "Wilson! Could you launch that Bird now? Right now, within the next three minutes?"

The engineer looked startled. "No; no, Hal. The tanks are still being topped and the radio interference checks aren't complete. Fifteen minutes, maybe. If you had given me an hour's notice of a change . . ."

"The good ideas come too late," Harold said, turning away. "Carry on, then." Fifteen minutes would see most of the FOE crowd standing next to the fence, patiently waiting to die if Jesus Hentson decided to launch his futile suicide mission rocket.

A matter that was looking increasingly doubtful.

Harold walked to the spacecraft communications console. He saw the alert face of his son staring out at him from the small TV screen—a face physically similar to the one he had known for years, and yet subtly different.

"Let me take your place a few minutes," Harold said to the technician.

The man looked surprised, but

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obediently removed his headset and rose. Harold slipped it on and sat down.

"Hello again, Jarl," he said aloud. There had been no time to talk in the suiting room.

Harold saw his father/son look toward his own console. The wall-mounted camera threw his face into an upper left profile on Harold's screen. Jarl gave him a wicked grin. "What say, Wild-Hair. Looks as if you've really got one up it this time."

Harold hadn't heard that nickname in years. Only his father had ever used it in public.

"Yeah, this project has brought on a few problems. Just wanted to tell you a small army of antitechs is landing on the shore just beyond the pad. It's doubtful we can clear them away in time to launch."

"Yes, I've been watching them since the first boats came into my view. Quite a little navy they have there. What are you going to do?"

"We'll transport them south of the Assembly Building as fast as possible. But it doesn't look good. We *could* have launched earlier and made the rendezvous a little sooner, at the cost of a little extra propellant. But I didn't think of it in time."

"They plan to stand around the fence, I presume? Harold, misguided fools or not, you can't kill all those people. I hate to see a Hentson whipped, but I think you've had it."

"That's the general consensus of opinion." Harold was silent a moment, then added, "Look on the good side. If you don't make it, we will have a little time together."

"And save the life in this healthy young body." Jarl nodded. "But I don't . . . really want to stick around for just a few days. Not unless I can do something useful. Did you know I had my predecessor's persona brought back when I was President? It was the usual computer simulation, and I tried to ask the so-called personality some questions. He gave me answers all right, but they were useless. Somehow the simulation didn't seem . . . quite as whole a person as I am."

"It probably wasn't. You're the first to be imprinted on a human brain where the circuits were both blank and genetically similar to you. We seem to have proven that this part of my idea works—but its general application is going to be pretty limited."

"I certainly hope so!" Jarl replied. He glanced at a side screen and said, "Well, I see the guards are hauling them off. But you've only got thirty minutes. You'll never make it, Wild-Hair."

Chapter 10

Sunday, June 12, 2011

Jodie drifted through the crowd, watching the uniformed guards collaring and hauling away the demonstrators. Some of the men went

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limp and had to be carried. Most of the women disdained to be touched, even by the female guards, and walked to the various vehicles. Those who were placed in vans with locking doors could not get out—but there were several other types of vehicles there, from hovertank fire trucks to small steamies. And where the guards had no way of confining them, the people were sneaking back the instant the arresting officer turned his back.

"We've got 'em whipped, Sarcoma!" Strobe called jubilantly. She was pressed to the fence next to Slippers. Jodie was walking around the pad, trying to escape the attention of the security guards. They were concentrating first on the people actually holding to the wire, leaving her alone at the moment.

Jodie waved to Strobe and kept walking. She knew her costume made her a conspicuous figure, but these guards had no way of knowing she was the leader of the group. Most of them would automatically assume some man was in charge, even the women in security. Male chauvinism was far from dead in the world.

The first full van started up and roared away, carrying about twenty people jammed inside. The huge hovertanks could carry a hundred if necessary, but the guards had no way of confining them. For the moment they were concentrating on filling the vans. It was obviously futile, but corporation security personnel were paid to act, not think. And they had their orders.

Harold Hentson was paid to think. As he was sitting and talking to Jarl, word came that the first van of demonstrators had been hauled away. He glanced at the clock. It was 4:15. Not a single truck would have time to return for a second load.

But fifteen minutes was time enough to clear the area, if everyone left willingly. They could get far enough away to be safe, even if at some damage to their eardrums.

And suddenly Harold had a wild idea. If those demonstrators could be panicked into running . . .

He hurried to the launch conductor's console. "Wilson! Can we fire the vernier rockets on the Big Bird separately? Say for about three or four minutes?"

"Sure, Hal, by taking it off automatic sequence and using the override system. But what's the point of that?"

"Never mind. Just stand ready to do so on my signal. I want to start one, then the other. Give me a mike and patch me into the pad loudspeaker system."

Wilson passed his desk microphone to Hal and flipped two switches on his console. He turned a dial and said, "That's maximum volume. I'll set up for the override."

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Harold seized the microphone.

"Listen, you stinking freaks!" an amplified voice rolled out over the pad area, coming from speakers set in the fence and throughout every building. *"Listen, damn you, if you want to live! This is Jesus-Son-of-God-Hentson! I'm going to fire that rocket! You hear me? If you stay there you're going to burn, goddamn you! I'm going to watch all of you fry!"*

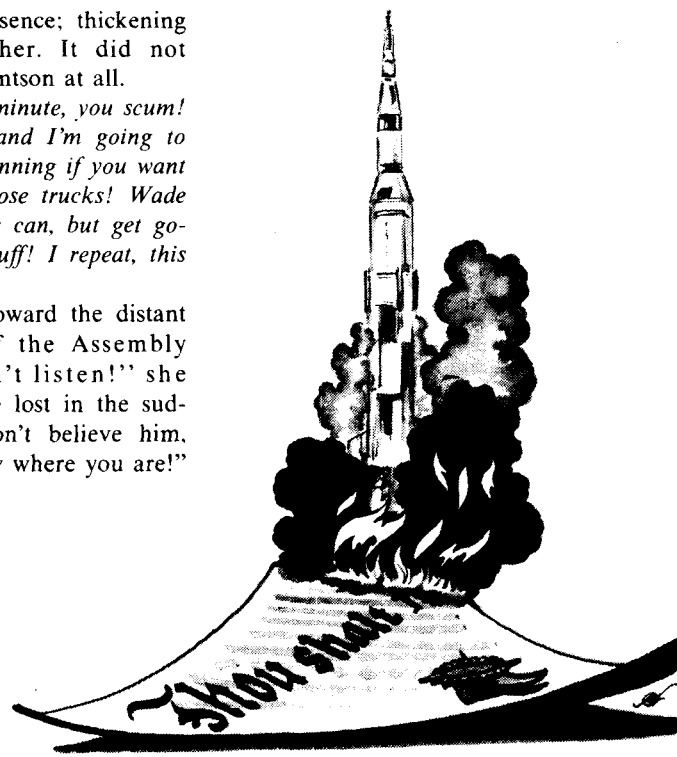
The voice was screaming high, wild, filled with rage and hate. It rasped on the ears like a file. Jodie felt the anger and hatred as an almost palpable presence; thickening the air around her. It did not sound like Hal Hentson at all.

You've got one minute, you scum! Just one minute, and I'm going to burn you! Start running if you want to live! Get on those trucks! Wade to the boats if you can, but get going! This is no bluff! I repeat, this is no bluff!"

Jodie whirled toward the distant blocky tower of the Assembly Building. "Don't listen!" she shouted, her voice lost in the sudden hubbub. "Don't believe him, he *is* bluffing! Stay where you are!" But only a few people standing near at hand could hear her.

"Last chance!" the voice thundered. *"Now you can burn!"*—and suddenly there was a deeper rumble. Flame belched from the base of the rocket, on the side toward Jodie. It was half-a-kilometer from the fence to the rocket, but the rising crescendo of sound smote at her ears with painful intensity.

Screams of fright filled the air. Even the guards looked terrified. There was a panicked rush for the



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vehicles. Several of the drivers started their engines, ready to race away, but the voice of Harold Hentson came rolling out agin. *"Drivers! Wait for loads! Let those on who want to live! Cover your ears and wait!"*

Those people nearest the shore were dashing through the shallow water to the boats, anchored several meters out. The rocket that was firing on the Big Bird continued to hurl sound and fire into the flame trench; the air around the pad grew hazy with smoke.

Almost a thousand struggling, screaming people tried to scramble on or in the huge fire trucks and other vehicles. The guards and firemen were a disciplined crew; they waited. Jodie ran with the second wave, urging anyone she could grab to stop. "Don't go! He's lying, it's just the little rockets! Stay here! He won't dare . . ." but no one was listening.

Two boats started and almost immediately went to cruising speed. Several people were left floundering in the water. Four more pulled out, but one angled back in to pick up the people who were left. A huge hovertank, with people clinging and holding to every available protuberance, rose on its air curtain and moved toward the road, gathering speed.

Fire burst from the other side of the rocket, and the noise level doubled. Jodie put her hands over her ears, and discovered her body was shaking slightly from the vibration—but the sound was bearable. Someone came running by her, a familiar face: Strobe. The tall woman was fleeing in wild-eyed panic. She screamed, her voice near hysteria. And after a few more steps she reached an open-bodied truck and climbed on to the exposed rubber tire. Hands grasped her wrists and yanked her up to the flat floor.

Jodie saw that several older people had fallen in the rush. Some younger ones stopped and dashed back to help them. A van roared away toward the road—whether full or with a scared guard at the wheel she could not tell. Engines were revving up all around her. More and more people piled on, and the vehicles fleeing the area became a steady stream.

Jodie glanced toward the water. Every person who had elected to escape by boat was on board one and leaving. Half the vehicles on land were gone, with several of the others starting to move. And most of the demonstrators were riding away, the rest fighting to get aboard the last few cars and vans.

The rockets had been firing steadily for four minutes now, and the Big Bird hadn't lifted off. But the steady beat of the sound still tore at her ears when she removed her hands in disgust. It didn't seem to have dawned on the crowd it was long past time the engines

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reached full thrust, and the vehicle rose from the pad.

A mob does not think. Once set in motion, it proceeds with blind relentlessness toward whatever it has elected to do. Jodie had used this characteristic often in the past. Now Jesus Hentson had turned it against her.

Jodie discovered she was the only person not already on board a truck or trying to reach one. It was amazing how fast a thousand people could move when it was over open ground and to a widely dispersed group of vehicles.

She turned and looked at the fat bulk of the rocket, towering almost two hundred meters into the air. Through the smoke and flame from the verniers she saw that the huge bell of the single main engine was cold and inert. She stood and stared at it, wanting it to ignite, to brighten and roar into the terrible sound that could shatter eardrums, rattle bones in their sockets, ultimately kill—if the flames and heat didn't reach this far first.

And then two women in guard's uniforms were grasping her arms, pulling her away. She saw that both wore ear protection. These women had guessed what the FOE people had not, that the small rockets might thunder and pound at them for an hour, but the main engine was not going to ignite until they were safely down the road.

Jodie gave up and went with them peacefully. No, Jesus Hentson was not bluffing. He was going to launch the Bird as he had said—because he had succeeded in scaring these people into retreating. There would have been no launch if he had failed.

The two women hustled Jodie into a cab with themselves, and the fire truck whirled away and down the road in a snarling of gears.

The security chief was playing her highest camera over the pad area. "It's working, Hal!" she called, trying to restrain her excitement. "And I talked with our dispatcher. He got word to all the drivers with radios not to leave until they had full loads. By God! we're going to make it!"

"Not quite," said Harold, glancing at the clock. It was 4:34, and the automatic sequencer took three minutes to fire after activation. "But close enough to be within the window."

Harold walked swiftly to the observation room, where McDougal sat dourly watching the busy men at their consoles. The marshal could see the small verniers firing on the giant screens provided on the wall, and that the Bird hadn't left the pad.

"Will you come with me, please?" Harold asked, grasping the man's arm.

"What for? What do you want?"

"I want you to serve as a witness for an illegal act. Hurry, please; this is important."

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The marshal reluctantly followed Harold to the launch director's console. "Wilson, show this man the automatic sequencer switch."

Looking puzzled, Wilson touched a tiny switch on his console face, similar to many others except that its plastic covering was shiny red.

"Is everything else ready?" demanded Harold.

"It has been for ten minutes. The engine would have ignited on time if I hadn't taken it off automatic, as you ordered."

"Good. Marshal McDougal, please notice. I, and I alone, am going to throw the switch that will cause engine ignition and lift-off in three minutes. I take full responsibility for my action. Neither Wilson nor anyone else shares the blame with me."

And with that Harold flipped the little red switch.

"You're going to suffer for that, Mr. Hentson," said the officer, his voice grim. "I don't suppose I can stop anyone who deliberately defies a Federal judge's order—but you'll have a long time in jail to be sorry you did that!"

"Probably," Harold agreed. The thought of prison deeply disturbed him, but if that was the price for this launch, he had no choice but to pay it. "For now, let's watch lift-off on the big screen."

"You're a cool customer, Mr. Hentson," said McDougal. "Now I guess I know why they call you Jesus—you think you can get away with anything." They sat down in the comfortably padded chairs and watched the tall rocket, the two streams of fire from the verniers still pouring down into the flame trench.

And two minutes later, well within the twenty-minute launch window, a small cloud of blue-white fire gushed from the center of the huge bell-shaped main engine. The fire grew, spread, brightened intolerably, until the camera could no longer convey the message of its whiteness—and great holding arms retracted, and another Big Bird rose majestically off

THE ANALYTICAL LABORATORY

August 1975

Place	Title	Author	Points
1	Doorways in the Sand	*Roger Zelazny*	1.754
2	The Peddler's Apprentice	*Joan and Vernor Vinge*	2.731
3	Consort	*Jerry Pournelle*	2.909
4	Doing Well While Doing Good	*Hayford Peirce*	3.180

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the pad on a pillow of flame.

Jodie's truck was four kilometers down the road when the earth began shaking under them, and a brightness like a second sun rising bloomed on the ground to their rear. Jodie twisted her head to peer past the driver's shoulder. She had to squint her eyes to protect them from the rising glare, as the largest rocket engine on Earth slowly lifted the Big Bird off the pad and into the tortured air. The gleaming white capsule on top, with an odd skeletal framework she had never seen on Tri-D extending ahead of it, rose above the smoke and vapor. And then the giant rocket picked up speed, its finned base and the massive stream of fire below it climbing above the umbilical tower. And seconds later it was past the angle Jodie could see through the window, and out of sight—but the sound of its passage still rocked and shook them.

"I'll be damned!" Jarl said aloud when he felt the engine ignite almost two hundred meters below. "I believe that crazy son of mine has pulled it off!"

It was good to ride a rocket once more, to feel the familiar shuddering vibration shaking the chair in which he was strapped—and a few seconds later the jar when the hold-down clamps released, and the instant surge upward as the vehicle rose off the pad.

There was a metal plate over the pilot's window, but the launch technicians were feeding a picture of the lift-off to his console. Jarl watched in wonder as the tail cleared the tower, the huge engine nozzle belching the widest flame he had ever seen. This monster made the Space Shuttle he was accustomed to riding seem small. He checked his instruments. That was all he had to do at the moment—monitor and report anything that seemed out of the ordinary. That at least hadn't changed since he last flew. But it was only a short time before Harold's face appeared on the screen, and the flaming tail he was seeing disappeared.

"Hey, old man, how do you like that for a lift-off?"

"Not bad for a one-burner. Did you get all those people far enough away, or lose a few eardrums?"

"Don't know yet. I'm sure no one was seriously hurt, though. How did you like my acting? I sounded so mean and believable I even scared the launch crew! But listen, I just called to remind you I had the easy part, and it's done. The rest is up to you."

"Thanks lots," Jarl said—and realized Harold was saying nothing but the obvious truth. The toughest part of this mission, with all its unknown dangers, still lay ahead—and he alone would bear the responsibility for its success or failure.

TO BE CONCLUDED

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the cerebrated jumping frog

DON TUITE

Rumors of unethical uses of biotechnology are grossly exaggerated.

JACK GAUGHAN

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I was in the California mother lode country searching for Haig Batrachian. A letter to the editor of the Sacramento *Bee* placed him in his native Fresno at the time of the Turkish invasion of Cypress, but the trail there was cold now. A large community of Armenians calls the mid-San Joaquin Valley home and any number of Saroyans and Varzhabedians were eager to talk of Turkish atrocities from times before the Prophet to those of Mustapha Kemal. Of the whereabouts of Haig Batrachian, however, no one would talk, though some there doubtless knew.

Management talent such as Batrachian's attracts attention. Certain persons have the resources to get around impediments like classified project reports and locked safes. There's a whole industry devoted to top management pirating, or "head-hunting," that owes its parasitical existence to the scarcity of men of Batrachian's caliber.

I was a field operative for one such organization. We had a client who wanted Batrachian and I was assigned to go after the man and offer him enough flattery, emoluments, and perquisites to turn his head.

I had followed Batrachian's trail far enough by now to know that he was growing tired of cities and crowds. I was drifting through the little gold rush towns on and off California Route 49, an area Batrachian must have known as a kid. If my research paid off, I might find him in one of them.

Haig Batrachian was one of California's technological prodigies. His early school records in Turlock and Fresno were no better than mediocre, but he'd knocked over Cal Tech for an engineering degree, with honors, in three years. He then scorned the panting aerospace recruiters and did a Master's in biological sciences at Cal Berkeley before taking a Juris Doctor at Stanford Law.

Batrachian's business career had been as spectacular as his academic career. He had a knack for walking into so-so companies and turning them around with volume production gimmicks. He usually bailed out just before the company was gobbled by some conglomerate.

There had been one company with a process for forming titanium. Titanium is light and strong, but brittle. Shaping it without cracking it is a tough job. When this outfit could find a customer who wanted formed titanium, they were able to charge him plenty. They had a few steady customers in the aerospace industry and they were paying their bills and distributing bonuses at Christmas, but they were never going to be traded on the big board. Enter Haig Batrachian. He was there about a week, mostly talking to the boys in the shop about technique. Then he got on a plane for Washington and all but disappeared inside the Pen-

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tagon for several days. When he emerged, he had an order for a million titanium army helmets, just as strong, but a third as heavy as the standard M-1 steel pot. The unit profit wasn't as high as it had been on those aerospace parts, but oh that volume! What the government did with the helmets is a mystery. They're probably stored in some warehouse on Terminal Island.

My notes on Batrachian tell of another company, one Batrachian started. The plant is still there, up in the north end of the San Fernando Valley. Batrachian acquired the facilities for birdseed right after the Sylmar quake of 1971. He was again involved in a government project, this time in R & D. The Pentagon wanted an antisniper weapon that was efficient, yet ecologically clean. Batrachian gave them what was surely the world's ugliest and most powerful stereo system. The thing was supposed to focus two subsonic woofers on the sniper's hiding place. There were some electronics to make sure that the sound from the speakers arrived at its destination in-phase. The subsonics would make the sniper's skull resonate, and before long, according to the theory, his eyeballs would pop out. It wasn't the kind of hardware the brass from DoD could bench-test the way they wanted to, but Batrachian did shatter some specimen skulls in a demonstration once for some junketing generals, and a careless technician had his eyes blackened, so the device probably would have worked as billed.

Then a glitch turned up. There was some military belt-tightening after Nixon's second inaugural, and since there was no one in the Pentagon who wanted to discuss the machine with a Congressional committee, Batrachian's R & D funds were cut off.

People who knew what happened figured that he had been stuck with a very ugly, very powerful, olive-drab hi-fi that was shy on treble response. There was even one call from a sound and light production group in Hermosa Beach who figured to rent the thing cheaply for rock concerts. Batrachian told them to stick it.

What no one was counting on, of course, was Batrachian's unmitigated genius for finding customers in flocks. The research and development on the gadget was already completed, at government expense. All he needed to do was to repeat his titanium helmet strategy. It was a matter of changing a few capacitors in the frequency controller to turn the device from an antisniper to an antiriot weapon. With the frequency change came a change in the locus of vibration. Instead of vibrating skulls, Batrachian's device now vibrated testicles. No mayhem, no bloodshed, no property damage, and for any male at whom it was directed, no defense. Batrachian

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wowed them at every law enforcement convention and went home to Saugus with pockets full of orders from police chiefs and prison wardens.

Following that coup, Batrachian disappeared. The letter to the editor of the *Bee* was the only concrete clue I'd uncovered. The search through the mother lode was only a hunch. I had no indication that the hunch was a good one until I got to Hornitos.

There is even less left of Hornitos than there is of most other gold rush towns. There are a few frame houses, a whitewashed church on a hill, the old brick building where a chocolate empire began, and, strangely, for so small a place, two saloons.

The bartender in one of the places told me about a guy who had stirred up some unusual trouble and then departed. I got an idea from the fellow's physical description that he might have been Batrachian. When I heard what he had done, I was certain.

Apparently, Batrachian had done some digging into Hornitos history. He found that when the town was originally chartered, it had been by the unusual expedient of a special act of the State Legislature. It had probably been part of some gringo effort to screw a few more acres out of the indigenous Mexicans. After the gold petered out, Hornitos became a near ghost town. By the time of the First World War, Hornitos had ceased to function as a town. There were no elections, no mayor, no town clerk, and no more records.

Legally, of course, Hornitos continued to exist, since it was part of the California legal code. It existed until 1949, when the Legislature, in an unequaled burst of enthusiasm, decided to clear that code of deadwood. After being peacefully buried for more than half a century, Hornitos was finally declared legally dead.

An interesting story, but not the kind that would attract anyone's close scrutiny. Anyone's but Batrachian's that is. He apparently got to wondering about the status of the former township-owned land. Who owned it now? It was the kind of challenge that would appeal to Batrachian. In Los Angeles, he'd been able to use only a small part of his legal training, examining more or less routine contracts. The Hornitos question was of considerable depth, though to most it would have seemed moot. There is a quite respectable law library at UC Davis, and it seems likely that it was to that campus that Batrachian retired to consider the question of Hornitos' ownership.

According to the bartender, when Batrachian returned, he had with him a sledgehammer and several packets of engineers' stakes. On a dewy morning, he had set off for a nearby patch of rangeland and had set about driving stakes. By ten

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o'clock, he had attracted the attention of a sheriff's deputy, and by one in the afternoon, he was in the county seat, chatting with the sheriff and counsel for the local ranchers' association. From this point on, the Hornitos bartender wasn't much help, but I managed to get from him the name of the deputy who had first talked with Batrachian that morning several weeks ago. That deputy turned out to be talkative after a few pitchers of beer. It seemed that he had himself been present during Batrachian's interview with the sheriff and the man from the ranchers' association.

Apparently, during that interview, Batrachian produced some convincing arguments that title to the township of Hornitos reverted to the Federal Government in 1949. Further, under the terms of the Homestead Act of 1862, that land was available in quarter-section parcels to any citizen who could file a claim and "prove-up" over five years.

That shook the ranchers' attorney a little, but he admitted that in all, there probably wasn't more than a section of land involved and that 640 acres probably wasn't worth getting into an involved legal battle over. That's when Batrachian casually threw in what he planned to *do* with the property after he had title to it. The deputy said he had thought the ranchers' association lawyer was going to have a fit.

It seems Batrachian had plans to contract with a breakfast cereal company to divide that land up into one-square-inch parcels and offer the parcels as premium "claims" in boxes of breakfast food. It was Batrachian's knack for creating volume sales again, and it looked like it would multiply his profits tenfold over what he could get from a straight real estate deal.

The thing that upset the ranchers' association man was the thought of even one percent of the owners of those "claims" coming to Hornitos in search of their particular square inches of ground. It was hard to calculate the consequences in terms of broken fences, trampled grazing land, and neurotic stampeding cattle. When the lawyer recovered himself, he made Batrachian an offer. Batrachian accepted and acquired the title of special counsel to the ranchers' association. He also acquired a fat monthly retainer. The deputy wasn't sure of Batrachian's exact duties, but they seemed to include keeping quiet about the status of Hornitos until members of the association took care of the problem of the unstaked claims.

So Batrachian's trail was now only a few weeks old. He hadn't been seen again in Hornitos, but the deal with the ranchers' association would help me track him down. He was getting retainer fees, so all I had to do was arrange to see the address on the envelope

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containing his check. I found that easy enough to do, by posing as a copy machine service salesman and haunting the office of the ranchers' association.

The address I ultimately saw was for a rural box in Mokelumne Hill, a town just a little more thriving than Hornitos, farther North on Highway 49.

The Hotel Leger is the most impressive artifact in Mokelumne Hill. It's a tastefully maintained relic of the days of Twain and Bierce. The main entrance opens onto a barroom that must be the envy of any Hollywood set designers who've seen it. I wasn't interested in the furnishings much the first time I walked in, though. All I saw was the lone man drinking at the end of the bar. It was Batrachian. My search was over. I thought at the time that all that was left for me to do was to make my pitch.

Batrachian was reading a newspaper, which he politely laid aside when I took the stool next to his and introduced myself. His patience dwindled, though, as I delivered my message, and by the time I had sketched in the outline of the last deferred stock option, his fingers were drumming on the bar and he had retrieved the newspaper.

"Headhunter," he said, "I have more important things to do than help bail your client out of his problems. Look," he said, pointing, "I want you to read this." The story he indicated appeared low on the righthand side of the first page.

BERKELEY PROF AFTER FROG PRIZE

ANGELS CAMP—Dr. Buffo F. Skinner, whose work in animal conditioning has brought him worldwide attention, announced yesterday that he will be seeking the $1200 prize for the world's champion frog jump here.

Skinner's most recent work has been in the scientific field of "worm-running." This strange discipline deals with the training of *planaria*, a family of simple flatworms. In laboratory experiments, the animals are taught to run mazes. Their relatively uncomplicated nervous systems make them ideal for learning studies.

"My techniques apply to frogs as well as to flatworms," declares Skinner. "The public is inclined to look upon science as irrelevant to everyday life. I intend to demonstrate that even a supposedly esoteric science has immediate application." Skinner said that he plans to donate the $1200 he expects to win for a record-setting jump to a minority scholarship fund at UC Berkeley, where he lectures.

The frog jumps, which commemorates Mark Twain's story, "The Celebrated Jumping Frog of Calaveras County," is held at Angels Camp in May of each year. A contestant's frog has 45 seconds to make three jumps. Distance is measured from starting point to point of landing on the last jump. A frog named "Ripple" has held the world's record since 1966, when he jumped 19 feet, 3⅛ inches.

The jump will attract added interest this year, since it is to be covered by the ABC-TV show, *Wide World of Sports.*

"Mr. Batrachian," I said, "so

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what? I just offered you a package with everything but the deed to Disneyland in it. What's a twelve hundred dollar prize in a silly tourist event to you?"

"Call me Haig, Headhunter." The look in his moist black Armenian eyes softened. "You've had to study my background to find me here. Do you know my academic record? Particularly my grade-point average?"

"Well, the quarterly GPAs escape me, but overall, you had a straight 4.0 at Tech, a 3.8 at Berkeley, and another 4.0 at Stanford," I responded.

Batrachian struck the top of the bar with his palm. "That son-of-a-bitch! The whole world must know about that Berkeley GPA! In my entire academic career, I never got a grade lower than *A* but once. Would you like to know who gave me my one and only *C*?"

"Skinner?"

"*Doctor* Buffo F. Skinner! I had turned up some interesting results as part of my thesis work, and before I knew what he was up to, Skinner sent my work off to a journal, over his name! When the material was published, he got the credit. I called him out over it, but he had control over the office records, and so I had no proof. All I got for my pains was that *C*. He'd have flunked me if he dared."

"You're not still carrying a grudge?"

Batrachian grinned. "I don't lie awake nights, planning Skinner's downfall. But this . . ." He waved the newspaper. "This is too much to pass up. He's bitten off too much this time! I'm going to publicly humiliate him . . . and his goddam frog!" He grinned widely and a bit madly. I would see that grin again in an unexpected place.

I looked at the date on the paper and began to protest. "You didn't even know about this before today! Skinner's had it up his sleeve for God knows how long. How are you going to find a frog and train it in just one week so it'll beat Skinner's frog? And what makes you so sure you *can* beat Skinner's frog?"

"I can, but I'll need some help. Suppose we establish a *quid pro quo*. You help me, and I'll go talk seriously to your client, even though I don't think he's offering a very interesting job, for all his juicy emoluments."

Batrachian had me intrigued. And besides, I had orders not to come back without him. "I'll help," I answered.

"Good. The frog presents no problem. I've caught enough of them in these hills as a kid. I know a pool up on the Stanislaus where they grow six inches across at the hipbones.

"What I need," he continued, "is someone who can help me with some minor surgery once I get the frog. How are you with a scalpel?"

"Awful," I admitted. "I even get squeamish carving a turkey. I think

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it has something to do with my father." We were both silent for a moment. Then I said, "Look, I'm supposed to be the headhunter—the recruiter of high quality talent, right? Tell me what you want and I'll find him for you, OK?"

As it turned out, I should have watched my pronouns. Batrachian told me what he needed, and I found a properly skilled lab assistant, but I didn't find a him.

Rana actually found me, rather than the other way around. I had spent the day making inquiries in antique stores, pottery shops, and ranger stations without turning up even a lead. I was back in the Hotel Leger, alone, since Batrachian was after his frog, when she just walked in and sat at my table.

She had a strange, wide-eyed look about her and it was difficult to tell her age, though she must have been under thirty. She had made something of a career out of dropping out, she explained. Most recently, she had dropped out of a commune near Truckee that was going through a leadership crisis. Somehow, the recycling had got out of hand and there was a group that was trying to get the entire commune to live in a dome made from their own accumulated solid waste products. Presently, Rana lived alone, as a caretaker on a farm near Railroad Flat.

More importantly, Rana explained that she was a drop-out biology major. And not only had she been a physics minor, but she said that for several years she had been a "phone phreak," ripping off Ma Bell with her little blue box. She claimed to have once held an hour-long conversation with the celebrated Cap'n Crunch over a circuit that was routed through four satellites and the capitals of the fifty states.

Best of all, she was willing to help. She'd spent the winter in isolation with two goats, a donkey, and a number of ducks, she said, and she was getting tired of the company. Especially the ducks.

When Batrachian returned with his catch, he approved of Rana immediately. Then he explained his plan. It would be cheating, of course, but if the operation were performed with care, no one would suspect, and Dan'l Webster, as Batrachian named his animal, would be a cinch to humiliate Buffo F. Skinner's frog.

"Even as recently as last year, this would have been impossible," Batrachian explained. "But today, a guy can buy phase-locked loop linear IC chips like these for the price of a six-pack." He held out his hand. There were three wafers of silicon a quarter of an inch square glistening there. They seemed covered with impossibly tiny silver patterns like cabalistic symbols.

"I've designed a fairly simple radio-control circuit," he went on. "Dan'l Webster will be wearing the

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receiver made from these under the loose skin of his back. A uhf quarter-wave stub will follow the contour of his spine.

"The tricky part will be wiring Dan'l Webster into the circuit. There must be two probes inserted into his frog brain. One will penetrate the region that controls muscular activities. We'll have to determine the spot that, when stimulated, will make Dan'l Webster jump."

"Going Alessandro Volta one better!" Rana laughed. She seemed to be enjoying the prospect of rewiring poor Dan'l. "And the other probe?"

"Will be implanted in the frog's pleasure center," Batrachian responded. "A jolt to that electrode will produce a feeling of orgasmic delight. That is the key to speeding up Dan'l Webster's education. One signal—and he jumps. He is rewarded by a pleasure signal the length of which is proportional to the length of the jump. On subsequent jumps, the length of the reward signal is proportional to the length of the jump times the cosine of half the angle between the two jumps. If Dan'l jumps in a straight line, he gets the maximum jolt; if he takes off in a different direction, he gets less."

"But you can't use your remote control transmitter at the contest, Haig," I objected. "You can stomp and whistle and yell all you want, but the judges won't think a radio-controlled frog is cricket!"

"You're really a lot more likable when you don't make bad jokes, Headhunter. Of course, for appearances' sake, I will stand empty-handed on the platform, making a great show of encouraging Dan'l with conventional shouts and stomps. However," and he smiled warmly at Rana, "it will be our friend here who will actually be in control of the frog, using our low-power radio transmitter."

That was the plan. Batrachian and Rana set to work, leaving me with little to do. It took about a day to prepare the integrated circuit chips for implantation. I excused myself from the scene of the actual operation, but even at a good distance, I fancied hearing frog screams.

I did inspect the results of the operation. Batrachian was delighted with Rana's skill at suturing. Against Dan'l Webster's moist, mottled back, the tiny rows of stitches were virtually invisible. "I've kept in practice tying flies," she explained.

Once the training started, there was little for me to do. I suggested to Batrachian that I use my talents to try to infiltrate the Skinner camp, to try to learn something of Skinner's training methods. Rana expressed some fear that I might inadvertently give our game away, but Batrachian reassured her, and I went.

Skinner, I learned from the pa-

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pers, was staying south of Angels Camp, in Murphys, a town slightly bigger than Mokelumne Hill, and a good deal more "discovered" by tourists from San Francisco and the Valley.

The great scientist was considerably more difficult to get to than Batrachian had been. Skinner eschewed socializing in the Murphys' tavern, and he seemed to associate only with his colleagues and graduate students. I was able to establish a relationship with one of the latter by feigning an interest in his descriptions of his preposterous and frequently anatomically impossible sexual encounters.

From this graduate student, I learned that Skinner had followed up on a technique that was being used with success by some of his fellow worm-runners. These planarian scientists were following a theory that learned behavior traits affect gene structure. Since the same genes appear in every cell in an organism, the learned traits can be transmitted by means other than sexual. This group of worm-runners exposed planaria worms to the same maze over and over. The worms who learned the maze the fastest were ground up and fed to another batch of worms who hadn't seen the maze. The scientists observed, with enough frequency to give them some faith in the test results, that succeeding batches of worms learned the maze in shorter and shorter periods of time.

Frogs, of course, are a lot more complicated than flatworms, but their nervous systems aren't all *that* sophisticated, Skinner had reasoned. According to the graduate student, he had conducted numerous experiments and had isolated those frog organs that, when eaten, best accomplish a transfer of learning from one frog to another. As an exercise purely in engineering, he had created a hand-cranked device that would take a whole frog, immobilize it, remove the required organs, and grind those organs up, all in one operation. He called it his "frogskinner's box."

Given a long enough string of laboratory frogs, all fed cannibal style from the frogskinner's box, the great scientist had developed a frog that was genetically imprinted with the desire to leap long and straight, on command. If the story were true, I was impressed.

I say, *if* the story were true, because I still had some doubts. It was possible that the graduate student had been planted to feed inquisitive persons a reasonable, if not appetizing, story. Skinner had rented a large metal shed, out near the highway, for his laboratory, and had protected it with strong security. I determined that I would get a look inside that shed before I reported back to Batrachian and Rana.

The security net was too tight to be broken before Sunday, the day the senior frog jump preliminaries

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started. Skinner and his crew were up early, but I was up even earlier, and I watched them depart. No one wanted to be left behind, so the shed was left unprotected except for the padlock on the door.

I'm used to using a bit more finesse than a common lockpick to get my information, but I'm also willing to bow to necessity. The padlock yielded quickly. The picture inside told me that the graduate student hadn't lied. I gagged at the stacks of eviscerated and lobotomized frogs lining the walls. Skinner's box was well named. I also found a large wooden platform in the center of the floor. The marks on it told me that the old record of 19 feet, 3⅛ inches wouldn't stand another year. There was a starting circle in the middle of the platform and a pattern of rings about that circle. The distance between successive rings was at least ten feet!

Satisfied now that I could report to Batrachian, I was turning to leave when a desk in the corner of the room caught my eye. There was a photo on it in a tacky gilt frame. It was a family portrait and when I saw it I felt suddenly weak. The portrait showed father and daughter against a backdrop of the Berkeley campus. There was no doubt that the father was Dr. Buffo F. Skinner, the famous psychologist. There was even less doubt that the daughter was Rana.

The very man whom Batrachian was trying to publicly humiliate had infiltrated our camp with his own daughter. And I was the instrument for recruiting her! No doubt Skinner would unmask Dan'l Webster and Haig Batrachian as cheats in front of a crowd not merely of thousands, but thanks to *Wide World of Sports*, of millions. Pray to God that Howard Cosell was elsewhere! It was not the kind of episode that would make Batrachian think kindly of my client's offers.

I ran from the building and raced for the Calaveras County Fairgrounds. If I could warn Batrachian in time, I might at least save him from public humiliation.

The battle for a parking space and the struggle through the crowds took too long. When I reached the ring, I discovered in horror that I was seconds too late. Batrachian was on the platform with Dan'l Webster and they were preparing for Dan'l's preliminary jump. At any instant, I expected to see Dr. Buffo F. Skinner leap to the platform and declare a fraud.

Nothing of the kind happened. Instead, Batrachian nodded to the judges, who started the timer. Batrachian began shouting encouragement to Dan'l Webster while at the same time winking at Rana.

Rana produced her transmitter, but it was nothing like the device I had seen her use training the frog with Batrachian. That had been a simple device resembling a transis-

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tor radio, with two extra buttons, one for Dan'l's jump-center, the other for his pleasure-center. This transmitter had a full Touch-Tone pad of twelve buttons. I recalled then that Rana had been a phone phreak. Now I realized that she must have implanted Dan'l with more IC chips than Batrachian had bargained for.

As Rana fingered the digits of her Touch-Tone pad, Dan'l Webster began a remarkable demonstration. First (and I never even thought that frogs *had* risor muscles), he grinned. It was a great, leering, silly grin, such as I had seen only once before. It suggested that he was getting full power to his pleasure-center.

Then Dan'l Webster shrugged his shoulders, as another frog of the same name had done almost a century and a quarter before. Following the shrug, he began to jump up and down, in place, not covering any distance. It was most rhythmical jumping, and at this point, Skinner finally appeared. He smiled wickedly at Batrachian, produced a harmonica, and played "The Irish Washerwoman" while Dan'l Webster hopped in time with the music. If you don't believe it happened, it's all in the *Wide World of Sports* videotape archives.

Naturally, Dan'l Webster was disqualified and Batrachian left the fairgrounds in a black mood. His depression lifted but little when I informed him that Skinner's champion had been likewise disqualified for eating two of the top contenders. It seems Skinner had genetically structured a bent for cannibalism in his leaping amphibians.

Batrachian was, predictably, quite unhappy with me, but not as unhappy as was my employer, who told me to stay where I was, that he would forward my termination check.

Not that that made me terribly upset. I'd come to like the mother lode and I was beginning to share Batrachian's dissatisfaction with the Los Angeles life-style. So, while Batrachian took off I knew not where, I stayed on, tending bar in the hotel in Mokelumne Hill. Dan'l Webster became mine by default, and Rana, pricked by conscience over the trick she had played me, gave me the blue box transmitter she had used to make Dan'l dance.

Now on weekends, there's a certain crowd that comes in from San Francisco, mostly media people, just to see Dan'l. They pump quarters into the player piano and I put him through his routine, though I'm never sure whether they come to see Dan'l dance or just to watch that orgasmic grin.

Batrachian himself even stopped by for a beer one night. He's been in Fresno again, conspiring with some militant Armenian nationalist. They plan to invade Turkey behind a phalanx of remote-controlled frogs in a reenactment of one of

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the biblical plagues of Egypt. Batrachian seems naturally to return to ideas of volume production.

The invasion is waiting only until Batrachian can talk the CIA out of that warehouseful of titanium helmets. From there on, they plan to follow up the frog assault with batteries of those olive-drab stereos, tuned to their ball-busting frequency range. When I asked the obvious question, Batrachian said that the Turks were on too much of a macho trip to put women in the front lines.

Batrachian expects little resistance from the Turks in taking over the Armenian territory they hold. He anticipates a little more resistance on the part of the Russians, when they learn of his demands that they cede the Armenian Socialist Republic to his independent Armenia, but, pledging me to secrecy, he told me a little of his plan for accomplishing that coup, and I swear it'll work.

He didn't swear me to secrecy on his plans for financing the operation and getting the Armenian economy over its first few years. I don't suppose I'm giving away state secrets if I warn you to be on the lookout sometime next year for the premium in your box of corn flakes. You may find yourself with a deed to one square inch of Mount Ararat. ■

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A woman, in Callahan's Place . . . ?

a voice is heard in ramah...

SPIDER ROBINSON

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How should I know?

It was a combination of things, I guess, and no one special reason. For one thing, the place doesn't look like much from the outside. Just "Callahan's Place": a hand-lettered sign over a big rambling wood structure off Route 25A, off-white walls that haven't been painted lately and an oaken door with a crack down the center. No neon; the sign is floodlit from beneath, and two more floods on the right side of the building barely illuminate a parking lot in which the cars are *never* parked in rows but always scattered haphazardly like goats in a pen. There is no broken glass beneath their tires—we keep it all indoors—but you can't see that from the highway.

Nor is the interior by any stretch of the imagination romantic—more like a cross between a Chinese fire-drill and Tim Finnegan's last party, most nights. But then you can't tell that from the highway either.

Whatever the reason, it just sort of turned out that women didn't come into Callahan's Place.

All right, maybe I'm ducking the issue. Maybe there was some kind of masculine aura about the place, a psychic emanation of chauvinist-piggery that kept it a male bastion for so long. Maybe we were extended adolescents, emotionally retarded, projecting a telepathic equivalent of the "No Girls Allowed" sign on Tubby's clubhouse. There's surely no doubt that Callahan's is culturally descended from the grand tradition of Irish Bars, and they tend to be misogynistic. Long-Drink McGonnigle's father-in-law, Thirsty O'Toole, assures us that Irishmen go to pubs to get shut of the women.

But I can't really believe there was ever any prejudice intended—Callahan doesn't insist that his customers be *human.* Certainly no effort was ever made to bar women, as happened at McSorley's. But men didn't come to Callahan's Place to meet women, and that may be why the few that chanced to drop in generally left quickly.

Then one night a woman walked in and stayed, and I was real proud of the way the boys acted.

It was a Punday Night, as it happened, a little late in the evening. A perfectly good topic—"trees—had been worked over for so long that the three surviving contestants, Doc Webster, Tom Flannery and Long-Drink, were . . . pardon me . . . stumped. Callahan declared all three co-winners and, as custom demanded, refunded their night's tab. But as it was still a bit early we decided to hold a play-off for Grand Pundit, no holds barred, any topic, and the three champions agreed.

Long-Drink led off, his eyes filled with that terrible gleam that presages a true stinker. They call him Long-Drink because he is one long drink of water: when he sits he looks like he's standing, and

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when he stands he looks like three other guys. He doesn't mass much more than a pickup truck, and he is the only man I know who can talk and drink whiskey at the same time. He does a lot of both.

"Gentlemen," he drawled, demonstrating the trick, "the story I am about to relate takes place in the distant future. Interstellar travel is commonplace; contacts with alien races are familiar experiences. One day, however, a planet is discovered out Antares way whose sole inhabitant is an enormous humanoid, three miles high and made of granite. At first it is mistaken for an immense statue left by some vanished race of giants, for it squats motionless on a yellow plain, exhibiting no outward sign of life. It has legs, but it never rises to walk on them. It has a mouth, but never eats or speaks. It has what appears to be a perfectly functional brain, the size of a four-story condominium, but the organ lies dormant, electrochemical activity at a standstill. Yet it lives.

"This puzzles the hell out of the scientists, who try everything they can think of to get some sign of life from the behemoth—in vain. It just squats, motionless and seemingly thoughtless, until one day a xenobiologist, frustrated beyond endurance, screams, 'How could evolution give legs, mouth and brain to a creature that doesn't use them?'

"It happens that he's the first one to ask a direct question in the thing's presence—it rises with a thunderous rumble to its full height, scattering the clouds, thinks for a second, booms, 'IT COULDN'T,' and squats down again.

" 'Migod,' exclaims the xenobiologist, 'Of course! *It only stands to reason.*' "

There was an extended pause, in which the sound of Long-Drink blinking was plainly audible. Then a hailstorm of glasses, full and empty, burst in the fireplace, loud enough to drown out the great collective groan. Doc Webster's eyes rolled briefly, like loaded dice, and came up snake eyes. Callahan began passing out fresh drinks with a slightly stunned expression.

The Doc contemplated a while, looking a lot like some of the merrier representations of the Buddha. "Bug-eyed punster sort of stuff, eh? Say, did you boys ever hear of the planet where the inhabitants were mobile flowers? Remarkably similar to Earthly blossoms, but they had feet and humanlike intelligence. The whole planet, from the biggest bouquet to the smallest corsage, was ruled over by a king named Richard the Artichoke Heart . . . anyhow, one day a pale-eyed perennial caught Richard's eye at a court orgy, and . . ."

I tuned the Doc out for a second. Fast Eddie, sensing some truly legendary horror in the offing, had stealthily left his piano stool and

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begun edging casually toward the fire extinguisher in the corner, an expression of rapt attention on his monkey face. There's enough of the Doc to make two or three good targets, but I sidled out of the line of fire all the same.

". . . the smitten monarch engaged royal tutors of all sorts, to no avail." the Doc was saying. "Artists, musicians, philosophers, scientists and mathematicians failed alike to engage the attention of the witless concubine, whose only apparent interest was in gathering pollen. At last the embarrassed Richard gave her up as hopeless and had some rotenone slipped into her soup. As he exclaimed to this prime minister later that night, 'I can lead a horticulture but I can't make her think!' " The Doc's poker face was perfect.

And in the terrible pause that ensued, before Eddie could trigger the extinguisher, a clear, sweet, contralto voice asked, "What sort of flower was she?" and every head in the place swung toward the door like weathervanes in a windstorm.

And there she was.

She was a big woman, but none of it was extra, and she stood framed in the doorway with an easy grace that a ballerina might have envied. Her hair was long and straight, the color of polished obsidian. Her skin was fair without being pale, and she wore a long-sleeved, high-necked dress of royal purple that brushed sawdust from the floor. She was pretty enough to make a preacher kick a hole in a stained-glass window.

She fielded the combined stares of a couple dozen goggle-eyed males with no effort at all, a half-smile playing at the corners of her mouth, and I had the distinct feeling that we could all have turned into three-headed tree frogs without disturbing her composure in the least. Perhaps that was why our own composure was so manifestly smithereened and scattered to the four winds—but I'm more inclined to think it was the one-two sledgehammer punch of, *A woman in Callahan's?* followed by the equally startling, *Why the hell not?* What shocked us the most was that we had no idea why we should be so shocked. Like opening a ginger ale and finding Jamesons' inside: nothing wrong with it, but it sort of takes you by surprise.

Doc Webster tried unsuccessfully to clear his throat; his poker face was now royally flushed. "I . . . uh," he stammered, "don't know *what* kind of . . . uh . . . flower she was, young lady."

A grin struck red lips back from perfect teeth. "I just thought," she said clearly, "that the king might be suffering from fuchsia shock."

There was a pause, and the soft, subtle sound of eyeballs glazing: you can only absorb so much at once. But Callahan rose magnificently to the occasion.

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"Sure and begonia," he breathed.

"Oh," she gasped, and blinked. "Perhaps I shouldn't be here. I didn't realize this was an Iris bar."

Long-Drink choked, spraying Bushmill's like a six-foot-seven aerosol. And suddenly we were all roaring, hooting, rocking with laughter, the kind that leaves your eyes wet and your sides sore. The timbers rang with merriment, a happy release of tension.

"Lord, lord," the Doc gasped, wiping his eyes and clutching at his ample belly, "nobody's made a straight man out of me in twenty years. Whoooo-ee!" He shook his head ruefully, still chuckling.

"Lady," said Callahan, a world of meaning in the words, "you'll do." There was respect in his whiskey baritone, and a strange, deep satisfaction. She acknowledged the former with a nod and stepped into the room.

The bar had been crowded, but by the time she reached it she had enough room to park a truck, and a wide choice of seats. She picked one and sat gracefully, making a small noise of surprise and delight. "I never thought I'd see an armchair this tall," she said to Callahan, setting her purse on the bar.

"I don't believe in bar stools," Callahan explained. "A man should be comfortable when he drinks."

"A man?" she asked pointedly.

"Oh, a woman ought to be comfortable all the time," he agreed solemnly. "Hey, Eddie?"

"Yeah, boss?"

"You want to open a window? I think I smell bra smoke."

She reddened.

I looked at Eddie, was surprised to see a glare instead of a grin. *Migod*, I thought crazily, *Fast Eddie has been smit.* It didn't seem possible: ever since his wife divorced him a few years back, Eddie had been a confirmed loner.

"Touché," she conceded at last. "I had no call to criticize your speech patterns. I'm sorry."

"No problem," Callahan assured her. "My name's Mike." He stuck out a big calloused hand.

She shook it gravely. "I am Rachel."

"What'll it be, Rachel?"

"Bourbon, please."

Callahan nodded, turned around and began mixing Jack Daniels and ice cubes in the proper proportions. She opened her purse, removed a wallet from it and pulled out a five-dollar bill, and I found that I was talking.

"I'm afraid you can't use that fin in here, Rachel." It felt strange not to be paralyzed.

She turned to me, and I saw her eyes for the first time close up, and I felt my tongue being retied tighter than ever. I don't know how to describe those eyes except to say that they looked impossibly *old*, older than eyes could be. There was some pain in them, sure—most

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people that Fate leads to Callahan's Place have anguished eyes when they first arrive—but beyond the pain was a kind of unspeakable weariness, a terrible and ancient knowledge that had not brought satisfaction. My memory churned, and produced the only remotely similar pair of eyes I have ever seen: my grandmother, dead of cancer these twenty years.

"I beg your pardon?" she said politely, and I tried hard to climb back up out of her eyes. Tom Flannery sensed my distress and came to my aid.

"Jake's right, Rachel," he said. "Callahan doesn't believe in cash registers either. He only deals in singles."

"You mean everything in the house costs a dollar?" she asked in surprise.

"Oh no," Tom demurred. "Everything in the house costs fifty cents. There's a cigar box full of quarters down there—see?—and you pick up your change on the way out . . . *if* you've left your glass on the bar."

"What's the alternative?" she asked with a puzzled frown, as Callahan set her drink down before her.

"Smash your glass in the fireplace," Callahan said cheerfully. "Does you a world of good sometimes. It's worth fifty cents, easy."

Her whole face brightened. "A long time ago," she said thoughtfully, "I bought an entire house for the single purpose of smashing crockery in it. I think I like your place, Mike."

"That makes two of us," he said comfortably, and poured himself a beer mug of Bushmill's best.

"To Callahan's Place," she said, draining her glass in one easy motion and holding it high. Callahan didn't bat an eye. He inhaled his own whiskey as fast as it'd pour and raised his glass too. Two arms fell as one.

Glass shattered in the fireplace, and a spontaneous cheer went up from all around. Long-Drink McGonnigle began singing, "For She's a Jolly Good Fellow," and was stifled without ceremony.

She turned to face us. "Lots of bars make a woman feel welcome," she said. "This is the first one that ever made me feel *at home*. Thank you all."

Ever see a whole bar blush?

Fast Eddie came in the door—no one had seen him leave—with change of a five from the all-night deli across the street and gave it to her gravely, a solemn look on his wrinkled face. But Callahan refused the single she offered. One exquisite eyebrow rose quizzically.

"Rachel," he said, "this here is Punday Night at my Place, and the champeen punster doesn't have to pay his . . . or her . . . bar bill. From what I've heard already, I'd say you've got a shot at the title." Her face lit with a merry smile. Callahan explained the format and

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the subject we were using and built her another drink.

She paused a moment in thought. "The Middle East," she began at last, "finally achieved a kind of uneasy stability in the late 1970's, Israel and the Pan-Arabian nations maintaining a fragile truce. Then one day the Arabian ambassador to Israel, Opinh Bom Bey, chanced to spy a carousel in the market place and, being intrigued by this Westernish recreation, decided to try it. Being a neophyte, he became extremely dizzy, dismounted from his wooden steed with great difficulty, and reeled out of the square. A Chinese shepherd called Ewe Hu was passing through Jerusalem at that time with three fine sheep, and Bom Bey staggered into their midst. The middle sheep promptly ate him.

"Horrific visions of the war that would inevitably ensue racing through his mind, Ewe Hu flung up his hands and cried, 'Middle lamb, you've had a dizzy Bey!' "

There was a ghastly silence, such as must exist on the airless wastes of the Moon, and Callahan's ever present cigar fell from his lips, landing with an absurdly loud splash in his glass. Oblivious, he lifted the glass and drank. When he set it down again, the cigar was back in his teeth, soggy and drooping.

Long-Drink made a face. "You didn't keep to the subject," he complained feebly, and Fast Eddie began to cloud up.

But she stood her ground, deadpan. "The story," she maintained, "was clearly about Zion's friction."

And the silence fell in a million shards, whoops of laughter blending in with groans and the volley of breaking glass on the hearth.

Tom Flannery entered a forfeit about the same time Long-Drink and the Doc conceded defeat, and that was Rachel's first night at Callahan's Place. She returned on the following night, and then on the following Tuesday, and soon became something of a regular. She was there when Tommy Janssen got married right in front of the fireplace, and the night the Place caught fire, and that sad night when gentle, softly smiling Tom Flannery finally failed to show up (Tom's doctors had given him nine months to live, the day before he happened into Callahan's Place), and she just seemed to fit. Although she was never by any stretch of the imagination One Of The Boys, she fit in a way that reminded me vary faintly of Wendy in Never-Never Land. But she was not disturbed by the hoolinganry of her Lost Boys, nor dismayed by their occasional ribaldry—once when Doc Webster, slightly jealous of her superior puns, tried to embarrass her with an off-color joke, she responded with a gag so steamy and so hilarious that the Doc

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blushed clear down to his ankles and laughed himself silly. And she was incredibly gentle with Fast Eddie, who came to display the classic signs of a man goofy with love. Suddenly all he knew how to play was torch songs, and while she always praised them, she pointedly missed the point—yet somehow allowed him to keep his self-respect.

Curiously, Eddie was the only one of us to fall for her. Certainly all of us at Callahan's were heir to the tradition of the B-movie—and the A-movie for that matter—that any female who enters your life in a dramatic manner must be your fated love. But somehow Rachel didn't elicit that reflex of imagined desire in us. She was never cold—you retained at all times an impression of vibrant femininity—but she never projected either the air of receptivity which provokes passes, or the studied indifference which is the same thing in disguise. We never even learned much about her, where she lived and that sort of thing. All we knew was that she was fun to be with: she was a note of nearly pure cheer even in a place where good cheer was commonplace.

But only nearly pure. There were those eyes. They reminded me in many ways of Mickey Finn's eyes when he first came around, and I knew it was only a matter of time before the right toast would unlock her heart and let out all that pain. Hell, we all knew it—but she had to do it herself. You don't pry in Callahan's Place.

It was nearly four months before she finally opened up, a Thursday I believe it was. She'd been abstracted lately, still taking part in convivial banter but strangely distant too, and I was half-expecting what happened.

Doc Webster had come bustling in about nine, later than usual for him on a Thursday since he has no hospital duties that night. So he bought a round for the house and explained. If asked, the Doc will assist at home birthings, a practice he's been at some pains to keep from the attention of both the AMA and the Suffolk County Police Department ever since the great Midwife Busts at the Santa Cruz Birth Center a few years back. Doc says that pregnant women aren't sick, that a lady ought to call the tune at her own birthing, all other things being equal—he has oxygen and other useful things in his car, and he hasn't lost one yet.

"She was a primipara," he said with satisfaction, "but her pelvic clearance was adequate, presentation was classic, she did a modified Lamaze, and damned well too. Fine healthy boy, eight pounds and some, sucking like a bilge pump the last I saw him. Lord, I'm thirsty myself."

Somehow news of new life makes you feel just plain good, and the Doc's own joy was contagious.

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When the last glass had been filled, we all stood up and faced the fireplace. "TO MOTHERHOOD!" we bellowed together, and it rained glasses for a while.

And when the racket had stopped, we heard a sound from inside the joint's single rest room, a literally unmistakable sound.

Rachel. Weeping.

Absurd situation. Over two dozen alarmed and anxious men, accustomed to dropping everything and running to anyone in pain. All of us clustered around the bathroom door (labeled "Folks") like winos outside a soup kitchen, and not one of us with the guts to open up the damned door because *there's a lady in there.* Fast Eddie's ferocious glare would have stopped us if scruples hadn't. Confused and mortally embarrassed, we shuffled our feet and looked for something tactful to say. Inside, the sobbing persisted, muted now.

Callahan coughed. "Rachel?"

She broke off crying. "Y . . . Yes?"

"You gonna be long? My back teeth are floatin'."

Pause.

"Not long, Mike. I'll hurry."

"Take your time," he rumbled.

She did, but eventually the door opened and she came out, no tear tracks evident, obviously in control again. Callahan mumbled thanks, glared around at us furiously and went in.

We came to our senses and began bustling aimlessly around the room, looking at anything but Rachel, talking spiritedly. Callahan flushed it almost at once and came back out, looking as innocent as a face like that will let him. He went back behind the bar, dusting his meaty hands.

Rachel was sitting at the bar, staring at where a mirror would be if Callahan believed in encouraging narcissism: plain bare wall, crisscrossed with all the epigrams, proverbs and puns Callahan's found worth recording over the past I-don't-know-how-many years of . . . ahem . . . flashing wit. The one she was looking at was attributed to a guy named Robinson. It said: "A man should live forever or die trying."

"Women too, I suppose?" she asked it.

Callahan looked puzzled, and she pointed to the quote. He studied it a minute, then turned back to her.

"You got a better idea?"

She shrugged, held out her hand. The big barkeep filled it with a glass of I.W. Harper and poured one for himself. The sparkling conversation going on around the room seemed to sort of run down. She sipped daintily . . . then said a word I'd never heard her use before and gulped the rest.

Then she rose from her chair and walked to the chalkline before the fire. The silence was total now.

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"To Motherhood," she said distinctly, and deep-sixed the glass. It sounded like a shattering heart.

She turned then and looked at us speculatively, trying to decide whether to cut loose of it.

"I've been here over three months," she said, "and in that time I've had a lot of laughs. But I've seen some real pain, too, and I've seen you boys help the ones that hurt. That man with one leg; the one whose fiancée had entered a nunnery, and was too devout to let himself be sad; the ski instructor who'd gone blind; poor Tom Flannery. I've heard much stranger stories, too, and I think if anyone can help me, you can."

I calculate that by now I must have heard at least a hundred people ask for help of one kind or another in Callahan's—it's that kind of a place. I only remember one getting turned down, and he was a special case. We indicated our willingness to help any way we could, and Fast Eddie fetched her a chair and a fresh drink. She had enough composure back to thank him gently; and then she began talking. During her entire narrative, her voice remained flat, impersonal. As though she were giving a history lesson. Her first words explained why.

"It's a long story," she said wearily, "at least it has been for me. An uncommonly long story. It begins on the day of my birth, which is October 25, 1741."

"*Huh*?" said Doc and Long-Drink and I and—loudest of all—Fast Eddie. "You mean 1941," Eddie corrected.

"Who's telling this story? I mean 1741. And if you boys aren't prepared to believe that, maybe I should stop right now."

We thought about it. Compared to some of the things I've heard—and believed—in Callahan's, this was nothing. Come to think, it explained a few things. Those eyes of hers, for instance.

"Sorry Rachel," Callahan said for all of us. "So you're 232 years old. Go on."

Eddie looked like he'd been hit by a truck. "Sure t'ing," he said bravely. "Sorry I innarupted."

And in the six or seven hours that ensued, Rachel told us the most incredible tale I have ever heard, before or since. I couldn't repeat that tale if I tried; that uncharacteristically impersonal voice seemed to go on forever with its catalog of sorrows, outlining for us the happinesses and heartbreaks of more than two hundred years of active womanhood. You could probably drag it out of me word for word with deep hypnosis, for I never stopped listening, but the sheer length and weight of the narrative seemed to numb my forebrain for indeterminate periods of time—the aggregate memory is largely gone. But different bits and pieces stuck in the minds of each

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of us, and I compared notes later. Me, for instance, I recall how, when she was describing what it was like to be crammed in a root cellar while a roaring fire overhead ate her first husband–and her first six children. She kept saying over and over again how cramped it was and how frustrating not to be able to straighten up; it struck me that even after all the intervening years her mind continued to dwell on merely physical hurts. Tom Hauptman now, he remembered in detail the business of her second husband, the minister, going mad and killing her next five kids and himself because anyone who refused to age like God intended must be sent by Satan. Tom said what struck him was how little progress churches have made in two hundred years toward convincing people that the unknown is not by definition evil. Long-Drink is a war games nut–he retained the part about the Battle of Lake Champlain in 1814, which claimed her third husband and two more children. Fast Eddie remembers the story of her first days as a whaler's whore in Nantucket because she stopped in the middle and asked him solicitously if she was shocking him. ("Not *me*," he said defiantly, "I'll bet you wuz a *terrific* whore!" and she smiled and thanked him and continued, clinically, dispassionately.) Spud Montgomery recalls the three children that resulted from Rachel's whoring years, because Spud's from Alabama and never stopped fighting the Civil War and that's what they died in. Tommy Janssen remembers her last child, the imbecile, who never did learn to feed himself and took thirty-five long years to die, because Tommy grew up with a retarded sister. Doc Webster's strongest memory is of the final birthing, her first in a hospital, the stillborn–after which the OB performed the hysterectomy. Doc identified strongly with the astonishment of a doctor faced with a patient in her late twenties whose uterus had delivered eighteen kids. Callahan characteristically recalls the man she was married to at the time, the first man since her psychotic minister to whom she felt she could tell the truth, with whom she did not have to cosmetically "age" herself, with whom she could share her lonely, terrible secret: the gentle and strangely understanding man who cured her of her self-loathing and self-fear and accepted her for what she inexplicably was; the good and loving man who had been killed, mugged for the dollar and a half in his pocket, a month or two before Rachel found Callahan's Place.

But not one of us retains anything like the complete text of Rachel's story. We wouldn't want to if we could, for condensing it into a comprehensibility would turn it into soap opera. And, probably, we couldn't if we tried–if somebody

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gave me a guaranteed-accurate rundown of my own *future* in that kind of depth, I don't think I'd remember much more. It was one king hell mountain of a tale, and it displaced its own weight in alcohol as the hours of its telling dragged by.

Me, I'm thirty-five years old, and I have been there and back again, and when Rachel finished her virtually uninterrupted narration I felt like a five-year-old whose great-grandmother has just recited the Story of Her Life in horrific detail.

In the dead silence that grew from Rachel's last words there just didn't seem to be anything to say to her, no words in all my experience that wouldn't sound banal—like telling a leper that it's always darkest before the dawn. Not that there had been agony in her voice at any time during her recital, nor any on her face when she finished. That was the most ghastly thing about her tale: it was delivered with the impersonal detachment of an historian, recited like the biography of one long dead. You Are There At The Battle Of Lake Champlain.

Oh, there was pain aplenty in her story, sure—but so buried, under two centuries of scars, that it could only be inferred. And yet the pain *had* been there earlier, had broken through to the surface for a moment at least, when Rachel had cried. How? Why?

I became peripherally aware of the men of Callahan's Place, arrayed around me with their mouths open. Even Callahan looked poleaxed—and that almost scared me. I glanced around, looking for even one face that held some kind of answer, some kind of consolation, some word for Rachel.

And found one. Fast Eddie's mouth was trembling, but there were words in it struggling to get out. He couldn't seem to bring himself to speak, but he looked like he sure and hell wanted to.

Callahan saw it too. "You look like you got something to say, Eddie," he said gently.

Eddie seemed to reach a decision all at once. Whirling to face Callahan, he jammed his hands in his hip pockets and snarled—snarled!—"Who ast you? I got *nuttin'* to say."

Callahan started, and if I'd had any capacity for shock left I'd have been shocked. *Eddie* barking at Callahan? It was like watching Lassie sink her fangs into Tommy's leg.

"Eddie," Doc Webster began reasonably, "if you have any words that might help Rachel here I think you ought to . . ."

"SHADDAP!" Eddie blazed. "I tell ya I got nuttin' ta say, see?"

The silence returned, and stayed a while. We could only surmise that Rachel's tale of sorrow had unhinged the banty little piano player. Creeping Jesus, it had near unhinged me—and I wasn't in love with her. The central issue, then,

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was still Rachel. Well . . . if Eddie had nothing to say, who did?

Who else?

"So all you have left is immortality, eh Rachel?" Callahan rumbled. "Tough break."

That did seem to put a little perspective on it. Surely Rachel's run of bad luck was due to change soon. It was only logical. "Sure, Rachel," I said, beginning to cheer up. "You're bound to start getting the breaks anytime now."

But it was no good. There was a smile on her face, but not a happy one.

"It figures," Long-Drink said hurriedly. "You can have a run of bad cards that seems to last forever, but sooner or later you pick up your hand and find four aces. It's just the Law of Averages, Rachel. Things always even out in the end."

"Sorry boys," Rachel said, still smiling sadly. "Nice try. I understand what you're saying—but there are a couple of holes in the logic. Two incorrect assumptions, one of them your mistake and one of them mine."

"What mistakes?" Callahan asked, his rugged face wrinkled in thought.

"Your mistake first, Mike. It's a natural one, I suppose, but it's a mistake just the same. What makes you think I'm immortal?"

"Eh?"

"I'm older than any four of you put together, yes. But longevity is not immortality. Mike, *nothing* is immortal: ask Dorian Gray. My clock runs as slow as his did—but it runs."

"But you . . ."

". . . look a lot younger than 232 years old," she finished. "Right. I look like I'm maybe crowding thirty. But Mike: *what's my natural lifespan?*"

He started to answer, then shut up, looking thoughtful. Who the hell knew?

"Someday I will die," Rachel went on, "just like you, just like Tom Flannery. Like all humans; like all living things. I *know* that, I feel it in my bones. And there isn't a geriatrics expert in the world who can say when. There are no data to work with; as far as I know I am unique."

"I reckon you're right," Callahan conceded, "but so what? Anyone in this room could die tomorrow—we're all under sentence of death, like you said. But to stay sane a body just has to live as though they'll go on forever, assume there's a lot of years left. Hellfire, Tom Flannery lived that way, and he *knew* better. Maybe there ain't no way to figure the odds for you—but if I was an insurance salesman, I'd love to have your business. Jake and Long-Drink are right: there's good times around the corner, always, and I bet you live to see 'em.

"I may not be as old as you, Rachel, but there's one thing I've learned in the time I have been

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around: joy always equals pain in the long run."

She shook her head impatiently and sighed. "The second mistake, Mike. The one that's my fault, in a way. You see, the most spectacular points of the story I've told you all tonight are the bad times, and so it must seem like I've just always been a hard-luck kid. But that's not so at all. I've known happiness too, in full measure, with Jacob and Isaiah and even with Benjamin, and most of all with my second and most beloved Jacob. There were good times in Nantucket if it comes to that, and throughout the whoring years: the profession is vastly underrated. And my joys have been greater, I think, than any that you could know—because you are correct, Mike: joy is the product of the pain that has gone before it, and vice versa. I know I could never have appreciated Jacob's quiet acceptance as much if I hadn't been looking for it for two centuries.

"Oh, the seesaw never stops. I learned that when Jacob was killed—but then again I was gladder to find this bar than any customer you've ever had."

"Then what . . . I mean, why uh . . .?"

"Why am I hurting? Hear me, Mike: there is nothing like extended life to make you aware that you're going to die someday. I am more aware of my own mortality than any of you could possibly be. Damn it, I've been dying for two hundred years!

"And how do you, how do normal people come to terms with that awareness of mortality? How do *you* beat death?"

"Oh lord," the Doc gasped. "I remember now. That toast . . ."

"Yes." Rachel nodded. "The one that gave me the weeps, for the first time in twenty years. 'To Motherhood.' I don't want to see or hear or say anything about motherhood ever again! A man or woman who's afraid of dying will either decide to believe in an afterlife . . . or have children, so that something of himself or herself will live on. I haven't believed in God since my years with Benjamin—and all my babies died childless and I can't have any more! I had nineteen chances at real immortality, and they all came up craps. I'm the last of my line.

"So what will I leave behind me? I haven't the gift to leave great books or paintings or music; I can't build anything; I have no eternal thoughts to leave the world. I've been alive longer than anyone on Earth—and when I'm gone I'll leave *nothing*: nothing more durable than your memories of me."

Her voice had begun to rise shrilly; her hands danced in her lap. "For awhile I had hope, for those of my children who shared my birthmark seemed to have a genetic share in my longevity. But that damned birthmark is a curse,

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an unbeatable hex. Not one of the marked children had any interest at all in siring or bearing children of their own, and accident or illness cut them down, every one. If even one of them had left a child, I could die happy. But the curse is unbroken." she slammed her fist down on the bar. "When I go I'll be *gone*, solid gone without a trace. Centuries of living, and no heritage more durable than a footprint in the snow!"

She was crying again, her voice strident and anguished, contorted with pain. I could see Eddie, his own face twisting with strong emotion, trying to break in; but now that he wanted to talk she wouldn't let him.

"So what have you got to offer me, boys? What's your solution? Have you got anything more useful than four fingers of bourbon?" She got up and flung her empty glass at the fireplace, began grabbing glasses off the bar and throwing them too, grunting with effort, still speaking: "*What* kind of . . . *answers* have you . . . *got* for an . . . *old* old lady who's . . . *trapped* in a moving . . . *box* sliding . . . *downhill* to. . . ." She had run out of glasses, and with the last words she gripped the long-legged armchair she'd been sitting on and heaved it high over her head to throw it too into the fire, and as she stood there with the heavy chair held high her face changed, a look of enormous puzzlement smoothing over the hysterical rage.

". . . death?" she finished softly, and crumpled like a rag doll, the chair bouncing and clattering into a corner.

The Doc was fast, and ten feet closer, but Fast Eddie beat him easily. He slid the last yard on his knees, lifted Rachel's head with great tenderness onto his lap, and hollered, "Rachel, *lissen* ta me!" The Doc tried to take her away from him, and Eddie backhanded him off his feet without looking up. "Lissen ta me Rachel, LISSEN goddamn it!" he thundered.

Her eyes fluttered open. "Yes, Eddie."

"Ya can't die, Rachel, not yet. You go and die on me an' I'll break both your arms, I swear to God. Lissen here, *if you want a daughter I can fix it.*"

She smiled, a faint and bitter smile. "Thanks, Eddie, but adoption just isn't the same."

IN TIMES TO COME

A new Poul Anderson story will grace our December issue. It's called "The Bitter Bread," and the cover is by Jack Gaughan. We'll also have stories by Bob Shaw and Gardner Dozois, a fact article by Donald Kingsbury on "Atomic Rockets," and much, much more!

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"I ain't talkin' about adoption," he barked. "But I tell ya I can fix it. Ida spoke up sooner, but you said you didn't ever want to think about kids again. Now will ya lissen, or are you too busy dyin'?"

She was teetering on the edge, but I guess curiosity must be a powerful stimulant. "What . . . what do you mean?"

"I'm sterile too, damn it. My wife divorced me for it." Our eyes widened a little more at this revelation, and I was suddenly ashamed of how little I knew about Eddie. "But I kept my ears open, an' I found out how ta beat it, how ta leave somethin' behind, see? Did ya ever hear of cloning?"

She looked startled. "You can't clone people, Eddie."

"Not today, you can't. Maybe you an' I won't live to see it happen, either. But I can take ya inta Manhattan to a place where they'll freeze a slice o' yer skin, a lousy coupla million cells, an' keep 'em on ice 'til they *can* clone people. Tom Flannery's there now, frozen like a popsicle, waitin' for 'em to invent a cure for leukemia; he tol' me about it."

I gasped in astonishment; saw Callahan beginning a broad grin.

"So how 'bout it, Rachel?" Eddie snapped. "You want cryonics? Or d'ya just wanna cry?"

She stared at Eddie for a long moment, focusing about five feet past him, and nobody dared exhale. And then two centuries of fighting spirit came through, and she smiled, a genuine smile of acceptance and peace.

"Thank you, Eddie," she breathed. Her eyes became for one timeless instant the eyes of a young girl, the eyes that belonged on that youthful face; and then they closed, and she began to snore softly. Rachel, who mourned for her lost children, and was comforted.

Doc Webster got up off the floor, checked her pulse, and slapped Eddie on the back. "Always a pleasure, *herr doktor*, to assist you in the technique which bears your name," he said jovially, spitting out a tooth. "Your medicine is stronger than mine."

Eddie met his gaze a little awkwardly, started to pick up Rachel's sleeping form, and then paused. "Gimme a hand, will ya, Doc?"

"Sure thing, buddy. We'll take her over to Smithtown General for observation, but I think she'll be OK." Together they lifted her gently and headed for the door.

But Eddie stopped when they reached it and turned toward Callahan, staring at the floor. "Mike," he began, "I . . . Uh . . . what I mean . . ." The apology just wouldn't come.

Callahan laughed aloud for the sheer joy of it and pegged the stump of his cigar into the fireplace. "You guys," he said, shaking his head. "Always cloning around." ■

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the reference library

Lester del Rey

ADVENTURE AND ROMANCE

A number of people nowadays seem to be concerned with discovering the type of literature out of which science fiction developed. A recent favorite source has been the gothic novel—the gothic of *Otranto* and *Frankenstein*, not the stuff currently sold as gothics. The gothic may well serve as the origin of the weird tale, but I suspect science fiction stems from older and more honorable ancestry. Orlando and Scheherazade may have had something to do with its background, though it must be older than either of them.

Certainly, despite a spate of recent stories of pretentious intent, most science fiction belongs to the general class of adventure fiction. This type of fiction possibly began as a set of tales about adventurers in far places, facing strange dangers. The first that comes to mind is Homer's *Odyssey*. When that tale was invented, it could be accepted as something possible happening to a believable hero, which separates it pretty firmly from fantasy.

But unfortunately for writers, the world got itself explored and magic and the gods stopped waiting around various corners. So King Arthur and Roland took over for a time, until men knew too much to believe in them. The modern adventure story really came into its own a hundred years ago; for a long time, it dominated the popular literature.

Essentially, the adventure story is one in which man is in conflict with some aspect of his environment. It should have some strong element of the unusual, as viewed from the daily experience of the average reader. The occupation might be strange, such as sandhogging or mountain climbing; or the background might be Sumatra or some "lost world" in the jungle. There was supposed to be a strong risk situation involved. And good adventure fiction had to seem believable to the reader.

Unfortunately, most backgrounds were ruined by the airplane, the road builder, and the movies. And most occupations began to be mechanized and taken over by major businesses. Also, too many writers had mined the basic situations, until the Western became a cliché and no detective could get beaten more than the last one.

Then came science fiction. Among the million or more planets of our galaxy, there was room for seemingly endless exotic backgrounds. In the future, who could guess how many strange and wonderful occupations might be discovered? And so there was a new birth

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of adventuring. (Arcot, Wade and Morey may have been heavy in their science at times—but mostly, they went adventuring.) It could be made believable, unlike the fantasy adventure, because it was supposedly based upon science—which could eventually achieve almost anything.

There was even a bonus. Romance could be rediscovered. Romance, incidentally, has nothing necessarily to do with love and sex; the dictionary doesn't mention these in defining the term. Romance is simply a tale of something wonderful happening. Most adventure fiction had been getting short on wonder because wonder was so hard to make believable. But away from here and now, who could doubt that wonders would be found?

Even magic was possible again. Ancient races had devices that could do anything magic had tried to accomplish. Jack Williamson's AKKA could save the race, with only a bent nail, a bit of wire, and a spark. And then there was ESP and TK and all the other scientific-sounding ideas. Hell, we even discovered dragons and gave them a Hugo!

Once upon a time, an Earthman named Odysseus helped wipe out the evil race of Altair. Going home in his trusty ship, however, he ran into a hyperspace kink and wound up lost. In trying to find his way back, he had to put in at all kinds of planets. There was the neutron star Scylla and its close companion Charybdis, between which he was almost caught. There was Circe, where women despised men and changed their DNA to that of swinelike creatures; there was the planet of one-eyed giants who threw asteroids at them. And so on. Finish it *ad lib.*

OK, that's a bit corny; it should be, after 2,500 years. But adventure and romance aren't necessarily to be scorned. The world seems to have needed them for a long time, and that need may be even greater in our modern world. It's a need that can be supplied best in science fiction. There, at its best, it can perhaps be better than ever before.

A case in point is **The Heritage of Hastur,** by Marion Zimmer Bradley (DAW Books, 381 pp., $1.50). Bradley is one of the writers who is happy to admit that she's writing "only" adventure fiction, because there's nothing she'd rather write. She loves a good tale of adventure and romance, and she never slights it; she's an honest craftsman, doing her best work in such novels.

This is one of the "Darkover" novels, which are the favorite among most readers of all her books. There are quite a few of these novels, though I've never kept exact count of the number. This one seems to come fairly early in the cycle, when the men of Darkover and the spacemen from Earth are still struggling to find a *modus vivendi.* But, like all the books in the series, it can be read without previous knowledge of the others.

Darkover is a rather grim world of terrible weather where humans were wrecked during the early days

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of space travel. Somehow, the Darkovians have survived, aided by the discovery of certain stones or minerals that enable them to focus their psi powers. Because of the possibility of using such devices as weapons, they've been forced to develop the Compact—an agreement binding on all that no weapon shall be used which does not entail equal risk—barring the skill of the user. Thus, close up weapons such as swords are permitted; but a gun or laser which could be fired from hiding is taboo. And, of course, attacking by use of the stones is the absolute taboo. However, even for permitted use, the stones—or matrix jewels—do not give something for nothing; using them takes long, hard training and entails a number of risks. Happily, Bradley uses the devices to enrich her story, not to cop out by solving her plot difficulties with them.

At the time of the story, Earth has established a settlement city on Darkover. But Earthmen, while agreeing to keep the Compact with the native Darkovians, don't take it very seriously. There is one rebel community where the ruler is also unwilling to abide by the Compact. With him, the Earthmen see nothing wrong in trading their modern weapons; if he doesn't bother to keep the Compact, why should they in their business with him?

What they don't know is that he is also planning to use a supermatrix along with their weapons in ways which would produce the ultimate horror for both Darkovians and Earthmen.

So the council of the Compact-bound territories must somehow find a way to deal with both Earth and the rebel ruler. And into this mess comes young Regis Hastur, who has inherited all the duties of a great lord—but who has somehow developed a barrier to laran—the ability to use telepathy or manipulate the jewels. He comes as a failure, effectively, despite his high position.

And from there on, we get a rich and highly colorful tale of politics and magic, courage and pressure.

It's an adventure novel—but not of the type all too common to less skilled writers. There are few contrived situations. The plot is worked out from the basic situation and the character of the leading people in the story. There's plenty of wonder—but all of it comes from the nature of the powers that Darkover has partly developed. And it's a study of responsibility, as Regis assumes within himself the obligation of bringing honor to the Comyn, or council, while knowing that it may cost him everything he wants and values.

This novel goes deeper into the nature and limits of the use of the matrix jewels than any previous. It also gets deeper into the mind of its hero, particularly toward the excellent end of the novel. Topflight adventure in every way!

Fade-Out, by Patrick Tilley (Morrow, 369 pp., $8.95), isn't billed as science fiction, except for the "what happens when a spaceship finally lands on earth" line on the cover. And it isn't specifically called an adventure novel, though

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it is called "grippingly suspenseful." But it is just the sort of novel to convince a major publisher that a science fiction adventure can make the big time. Ah, well.

It has all the requirements. There's an excellent map—which you won't really need; it has acknowledgments for all the help from various knowledgeable people who made the book possible; it has a listing of principle characters, beginning with the President of the United States and finishing with a Russian astrophysicist—a serious book of politics and science, see? And every chapter begins with the date and location, so the reader won't go astray.

But don't worry. The reader isn't likely to go astray. Except for bits of politics in Washington and a brief trip to Russia, most of the events take place in a small area of Montana—exact location given, but not that important. The characters don't matter that much, anyhow, except for a few the reader should soon learn to recognize by name and character tags; the President acts like a politician, of course, and most minor characters simply act their part. And the dates are there to make you think time is running out, in case you hadn't already noted it.

Oh, yes, the plot. It begins rather well, as far as the suspense element is concerned. A spaceship of some kind is found orbiting Earth. Then suddenly all radar and electronic signals are blanked out by tremendous interference. And something falls to Earth.

It immediately digs itself into the ground. Scientists probe for it and locate it below the surface. And for some reason, after hiding itself, it comes up. In time a portal is opened. One man is put inside the tricky entrance. When they try to get him to come out, he refuses. Another is sent in, sees a vision, and then also decides to stay in. Why? Don't ask me, I only read the book. What develops out of this action of two men? Nothing, apparently.

Then a kind of robot spiderman comes out and walks around. He keeps walking around and staring at things. Then some bad crewmen decide to kill him, so they do. And meantime, of course, Russia and our country are going wild.

Early on, the interference not only ruined radar but somehow stopped a car when it got near where the thing was. This was truly remarkable. It takes a lot of electric potential to do that, when you consider that the ignition is pretty well surrounded by grounded metal.

Anyhow, the jamming of all communication picks up and gets worse. Meantime, they discover there are a lot of other alien objects fallen to Earth. And now the thing begins to grow and grow.

The "mind-boggling conclusion" promised in the blurb actually does boggle my mind. I can't understand how a writer could start a book like this and expect to end bogglingly with a total failure to solve or achieve anything against the alien thing; I'm boggled that anyone thinks that's mind-boggling.

I really didn't like the book very much, somehow! ■

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Dear Mr. Bova:

When "one" is adequately defined it can be observed that one and one add up to two; and this observation, capable of proof within the definitions of one and two, can be taught to those who are willing to accept the definitions and the process of addition.

Those who *must believe* that one is necessarily less or more than a single unit, and that adding one and one with those faulty units can never either reach a full two or fail to overreach the supposed quantity of two, are those who would nitpick a definition of joy, insisting that joy is related to a personal preference for a definition of a state of psyche and can have no reference with an abstract "word," i.e. "joy."

A pox on the whole wretched bunch of such nitpickers. And while I'm at it, a pox on the anti-science, UFOlogy, Fundamentalist, von Däniken cliques—the von Däniken bunch in particular.

It's simply nonsense to set the natural evolution of intelligence back a galactic notch, maintaining that it happened *sometime-somewhere*, but not *here*.

HELEN URBAN
6520 Satsuma Avenue
North Hollywood, California 91606

As John Campbell pointed out, hydrogen ain't cultural—nor is it a subjective state of mind.

Dear Ben:

Your Editorial in the June 1975 Analog has perturbed my faith in a few members of the engineering community. The simple test devised by Stine, *et al.*, did *not* prove that the Dean device wasn't all it was cracked up to be. A tethered oscillating device will invariably precess about some center when acted upon by a gravitational body, whether it is a gyroscope with one end "fixed" to the Earth or a plumb bob suspended from an overhead point as with the Dean device "test."

Mechanical systems acting within a gravitational field seem to have too much phase lag to be effective unidirectional vehicles, due to their inherent mass. In free space or in exceptionally weak gravitational fields the Dean device might well work. As a possible alternative to get around the gravitational effects of the Earth, has the device been tested in free fall, or perhaps "suspended" in a magnetic field?

Some nine or ten years ago I came to the conclusion that elec-

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tromagnetic fields could become "mass-surrogates" because they were sufficiently massless as an inherent characteristic, and also could give near idealized phase lags to perform a work function. This is the basis for alternating current theory. To do the same in a unidirectional mode, one might simply devise a *solid-state* cyclotron and take advantage of precession-damping diamagnetic fields. However, it would require a single toroidal, homogeneously uniform and isotopically pure crystal of one of the metallic elements. I'd place my bets on the hexagonal crystal set.

In such a system, were electron pairs accelerated to velocities approaching that of light, the mass-surrogate push would be in a direction normal—or at right angles—to the plane of the toroid, which must also be cryogenically cooled to obviate thermal lattice vibration and disorientation of the crystal structure. But there isn't very much isotopically pure material to elevate theory into practice, so we will have to wait for technology to catch up. (Oh, the pain of waiting.)

FREDERIC B. JUENEMAN

New laser separation techniques might ease that pain considerably.

Dear Mr. Bova:

Your Editorial of June 1975 was wonderful, in that it is a relief to find someone else willing to state that our distant ancestors were not technological morons. Indeed, I feel that figuring out how the Pyramids, Stonehenge or Tiahuanaco came to be, *without* these ancient meddlers, is much more fascinating, in ways, than trying to deduce who these men from outer space were.

May I advance a hypothesis of my own regarding Erich von Däniken's mysterious Andean "runways" that he claims were built of the nonpeople by the nonpeople, for the nonpeople? This is a particularly convenient time to do it, since I can call on "The Storms of Windhaven."

The advent of the Rogallo wing has demonstrated that Man can fly without monstrous gas-guzzling jumbo jets. Indeed, he needs no more than his own handiwork and a tall cliff. (Certain standards are necessary for safe construction, of course.)

What do the Andes have which are found in very few other places? These runways, for one. For another, the Andean condor, one of the most accomplished and immense gliding birds of the modern world. Lastly, a practically isolated civilization, compared to the potential influence of Asia and Africa on the ancient Egyptians.

Is it too much to assume that the same Incan or Toltec priests who watched the stars also had a da Vinci among them who observed the birds? That the same balsa logs which took Thor Heyerdahl gliding across the Pacific to Easter Island could, properly shaped, be made to carry a priest through the air? Heaven knows, they had no shortage of cliffs.

Is it ridiculous to think that a nation living amidst monstrous mountains such as these would find gliding a much more rapid means of transport? For messages, especially,

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encoded in that puzzling device, the quipu.

Perhaps we never will discover anything like this. Balsa wings are not particularly noted for longevity. As for why the practice was not maintained to this day, aren't our own parallels sufficient explanation?

One alternative is that, due to flying fatalities, the priests felt they were being punished for flying, and stopped of their own accord.

Need I suggest, on the other hand, just what a change of imperial administrations might bring about? Remember, even when playing soccer, the ancients used the heads of the losers . . . Imagine what politics might produce!

KENNETH A. RUMBARGER
123 Poplar Avenue
Wayne, Pennsylvania

You mean that when the Incas' version of NASA suffered a cutback. . . .?

Dear Mr. Bova:

I can appreciate and sympathize with the sentiments expressed in the Editorial of your June 1975 issue ("None So Blind"). However, I think it is regrettable that UFO's continue to get portrayed as just another pseudoscientific hoax or a bad case of mistaken identity– it is in view of the highly credible evidence for their existence. It is almost certainly true that the vast majority of such reports do result from misperceived natural events. These common reports can be explained rather easily (such as your airplane-in-the-fog example) and do not really constitute a problem.

Surprisingly few people trained in scientific thought realize the extent of the credible UFO reports. The problem with UFO's is not that evidence does not exist, but that it is not accepted by the scientific community. Indeed, it should be apparent to anyone who really looks into the matter that there is more evidence for UFO's than for many phenomena readily accepted by the scientific establishment. The only difference is that UFO's don't *seem* to fit our nice model of "The Way Things Are." This creates a severe emotional reaction on the part of many scientists who then go out and denounce the subject with great authority even though they may know very little about it. Astronomers in particular are very prone to do this.

Let us assume, as some people suggest, that UFO's are indeed spaceships that can accomplish the fantastic feat of regular interstellar travel. Let us also assume that they drop in now and then to do their thing and then get the hell out before they get attacked by the hostile savages that inhabit this planet. What could one do to prove their existence? Well, for starters you could try to get real reports from reliable, trained observers, you could perhaps obtain occasional photographs if you were lucky (but since no one knows what UFO's look like in the first place these would not be accepted as proof); you could track them on radar or chase them with our crude aircraft, but beyond this what else could you do? The only proof that would get any serious attention would be

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to catch one and put it on display at the Smithsonian (and even then it would be denounced as a fake!). Clearly this would be quite a task since by necessity these guys would have to have technology thousands (or even millions) of years in advance of our own.

As an unfortunate by-product, scientific thought has engendered a kind of false confidence and dogmatism among its practitioners which has frequently prevented them from accepting evidence that *appears* to run counter to their image of what the universe is like. In science, as in everything else, Man is his own worst enemy. It is the psychological hang-ups of those who practice the scientific method which prevent it from being used most effectively. Let us have faith in the method but let us be wary of those who claim to use it. The history of science shows clearly that great discoveries are not acknowledged until the political climate is right. We must therefore be content to wait until a new wind blows away the emotional fog and allows us to really investigate this matter.

T. W. HANSEN
2747 Bloomington Avenue
Apt. 1
Minneapolis, Minnesota 55407

First, I doubt that a real interstellar vehicle on display at the Smithsonian could long be regarded as a fake. The problem is, it wouldn't get to the Museum for a long, long time; too many scientists, engineers and military men would want to examine it in exhaustive detail. Secondly, as Philip Morrison has pointed out, it would seem more likely that an extraterrestrial race would announce its presence to us in unmistakable terms, just as we would do if and when we reach other intelligences Out There. The "hit-or-miss" nature of UFO sightings just doesn't sound like the workings of rational explorers or scouts.

Dear Mr. Bova:

In your June Editorial you have committed an unpardonable sin against progress: you have shot down ideas without producing new ones. Progress comes from finding ideas that work; shooting a million false ideas full of holes will not produce progress.

There is a good reason why crackpot ideas like those of Velikovsky can catch popular imagination: they are positive ideas. They are simpleminded, farfetched, even impossible, but they are positive ideas, and if one keeps on proposing positive ideas long enough, one is bound to come up with a winner someday. This is the reason why positive ideas, no matter how farfetched, can catch popular support. Negative, critical ideas, the kind that you used in your Editorial, never produce anything. No matter how many wrong ideas you shoot down, you are not going to accomplish anything constructive; no dead idea can bear fruit.

The right way to fight birdbrained positive ideas is to come up with better ideas so that the probability of accomplishing something is increased, not decreased. If Velikovsky's and his fellow crackpots' ideas have gained popular ac-

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ceptance, the onus has to be placed squarely on the shoulders of science fiction writers and editors for failing to fire popular imagination. In a land of midgets a dwarf is a giant!

ANDREJS BAIDINS
1104 Windon Drive
Chatham
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I don't think we need new ideas to account for historical events such as the invasion of the Hebrew tribes into Canaan, nor to debunk outright falsehoods such as the Bermuda Triangle or the various versions of von Dänikenism. Most of these "theories" are merely throwbacks to medieval thinking, in which the responsibility for human behavior is placed on the shoulders of extrahuman entities. Changing the names from "God" or "Allah" to "ancient astronauts" or "a comet that became the planet Venus" does not change the quality of the thought. These are not positive new ideas, but old superstitions tricked out in modern dress.

GUEST EDITORIAL *continued from page 10*

medical practices. There is an anthropologist involved as a policy-maker and decision-maker on the American Hospital Association Review Board. Other anthropologists have worked in hospitals as patient advocates, helping to improve relationships between patients and hospital personnel (both medical and nursing, as well as para-professional personnel). Medical anthropologists are also involved in epidemiological studies, assisting public health officials in identifying cultural characteristics which affect or perpetuate disease conditions found in various populations.

Legal Anthropology: Anthropologists have been working with law enforcement agencies. Included among these are people working with juvenile gangs, prostitutes, prisoners, skid-row inhabitants, drug addicts, alcoholics, and other often abused minorities. Their work also includes processes intended to bring about legal reform for victims of the legal system. Anthropologists have served as expert witnesses in land claims; in identification of contemporary human remains; in settling disputes that involve multiethnic confrontations in culturally heterogeneous communities where the law must be interpreted according to various cultural traditions, and others. In national and international public policy formulation, anthropologists have also served as advisers for the interpretation of law to the people which the law intends to affect.

Social Impact Assessment: Anthropologists have been involved in writing manuals for social impact assessment, thus giving guidance to planners about the impacts that specific projects are likely to have on the members of communities

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where projects are to be located. Anthropologists have worked with the US Army Corps of Engineers, Forest Service, Department of Agriculture, Bureau of Reclamation, and other US agencies in an attempt to help guide social impact assessment procedures, as well as in the actual assessment process.

Other Areas: As private consultants, anthropologists have worked in industry to mitigate dissension between labor and management and in factories to improve general working conditions for laborers. As experts of phenotypic and cultural variations, they have worked in the design of homes, communities, buses, aircraft (and other forms of public transportation), clothing, transportation systems, and other human commodities and services. In the media, anthropologists serve as consultants for, or themselves produce, documentaries on various peoples—attempting to control the degree and amount of negative stereotyping of others that such films might promote as well as participating in television discussions about various people. In community development and planning, anthropologists work with community people and agencies in efforts to improve the quality of life.

Most of these anthropologists receive some form of pay for the work they do outside of academia; many do not. Of these latter, most are dedicated to the practical use of anthropology in everyday life and believe they have a responsibility to carry a mandate of cultural relativism to a wider audience than can be found within the university confines. Even though all anthropologists are not directly involved in these efforts, many of those not personally involved in applying their research findings to the solution of contemporary social problems nevertheless do contribute to these solutions by sharing their research results with their colleagues.

It is the applied anthropologist who is most likely to be sought for work on a particular project or who is most likely to go out hunting for a problem which s/he can help solve, but the non-applied traditionalist does have something to offer, and if approached will usually provide some input to the decision-making process.

Perhaps if these latter were not treated as though they had been imprisoned in a tower, they would make their work immediately available to "outsiders." There are some, of course, who do not want to acknowledge an indebtedness to the society which sustains them; they see themselves set apart in a world where they can be left alone for deep thought and discovery, where genius is thought to be bred and nurtured in the university.

But one cannot tell the reluctantly imprisoned from the self-confined scholar without opening the way for exit. ■

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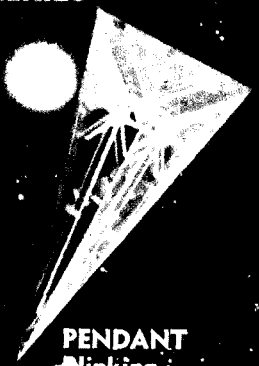

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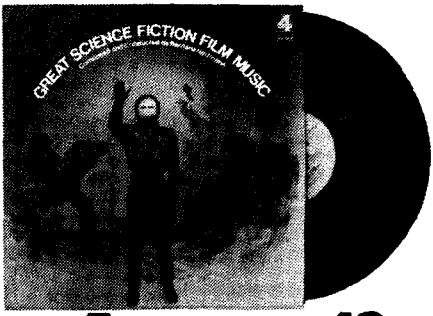

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